

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway News

The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.

RAILWAYS • ESTABLISHED 1835 • THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY

AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL, LONDON"

Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free:

British Isles and Abroad.....£2 5s. 0d.

Single CopiesOne Shilling

Registered at the General Post Office, London as a Newspaper

VOL. 79 No. 13

FRIDAY, SEPTEMBER 24, 1943

CONTENTS

	PAGE
Editorial Notes	297
Special Class Salaried Staff	299
Railway Development in the Belgian Congo	299
Signalling and the Indian Rule Book	300
Railways in Brazil	301
Station Accommodation	301
Letters to the Editor	302
Publications Received	302
The Scrap Heap	303
Overseas Railway Affairs	304
The Distant Indication under Multiple-Aspect	305
Signalling	308
Bifurcating Scales for Railway Rates	311
Personal	311
Transport Services and the War	313
Stock Market and Table	320

DIESEL RAILWAY TRACTION SUPPLEMENT

* The October issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on October 1, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:

Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

"First In, First Out"

THE announcement by the Minister of Labour & National Service that the demobilisation of men in the Forces will be based on their length of service, and his additional suggestion that as businesses have had to learn to do without their skilled men during the war they will have to do so afterwards, has aroused a good deal of disquiet. A policy of this kind seems to be singularly short-sighted, in view of the admitted difficulties which will face industry in the immediate post-war period, and, indeed, would appear to be a contradiction of the method which has been sponsored by Mr. Bevin himself in the withdrawal of men from industry. The effect of a "first in, first out" arrangement for demobilisation would mean that skilled and key men, who have been retained in industry for varying periods—perhaps up to the final months of the war—would be among the last to return. It must not be overlooked that in every case the retention of these men, for whatever period, has had to be justified before appropriate tribunals. If after the cessation of hostilities British commercial undertakings are to be deprived of their services for an indefinite further period, and at the same time have to absorb less skilled and less responsible members of their former personnel, they will be placed under a heavy handicap in post-war reorganisation. Such a policy would be a poor basis for re-establishing Great Britain in the industrial markets of the world.

Railway Assessment Authority

The annual report of the Railway Assessment Authority for the year ended March 31, 1943, deals first with the proceedings of the authority regarding the third draft valuation roll of the four main-line railways operative for the five rating years from April, 1941, to April, 1946, and secondly with the second draft valuation roll of the London Passenger Transport Board, which covers the same period. At March 31, 1942, there were outstanding appeals in respect of the second roll by the L.M.S., L.N.E., and G.W. Railway Companies, and by the Cardiff Corporation, with regard to a large number of properties. In order to avoid litigation under war-time conditions these appeals were withdrawn concurrently with differences between the authority and the companies as to the third draft valuation roll, and figures were agreed at approximately 16½ per cent. in total above those for the second valuation roll, without prejudice to the future. These agreed *cumulo* net annual values were set out on page 160 of *The Railway Gazette* for February 12, 1943. They were G.W.R., £1,631,068; L.M.S.R., £1,747,573; L.N.E.R., £1,281,553; and Southern Railway, £1,339,806. For the L.P.T.B. second draft roll the agreed *cumulo* was £850,000, compared with £945,270 for 1936-41. Municipal authorities generally, with the exception of the London County Council, appear to have acquiesced in these arrangements. The L.C.C. sought an injunction to prevent the assessment authority implementing the settlement with the railway companies, and applied for an interim injunction with respect to the part of the roll relating to the Southern Railway. No Order was made on that application, but the action is still pending.

Railway Finance and the £ Sterling

In an article in *The Railway Stockholder* of September, 1943, Mr. J. E. Allen remarks that the devaluation of the pound sterling is one which has been overlooked in the discussion of railway finance in the House of Commons and elsewhere; yet it is of the greatest importance. It should be the chief point, Mr. Allen insists, in the railway case when any financial arrangements are being debated with the Government; in itself it is enough to prove that the market valuation of railway stocks is enormously below the real money value. When the Chancellor of the Exchequer is dealing with payments to railway stockholders he assumes that the paper pound is worth as much as a gold pound; he cannot do this when he is dealing with the wages of railwaymen, who insist, rightly enough, on getting real value for their work and in fact are getting rather more than two paper pounds for the one gold pound they were receiving in 1914. Mr. Allen believes that the pound is more likely to fall further in value as the war goes on, not to recover, and he strongly advises against selling home rails at present prices. In this, he supports the opinion expressed week by week in *The Railway Gazette* in "The Railway Stock Market."

Lt.-Colonel C. M. Turner

Lt.-Colonel Clive Mansfield Turner, General Traffic Manager, Associated British & Irish Railways Incorporated, New York, whose death in that city we recorded briefly last week, had seen railway service during and after the war of 1914-19 in Salonika, Bulgaria, Greece, and Turkey, as well as in this country and the United States of America. He had begun his railway career on the former Midland Railway in 1900, and he returned to

England, to the L.M.S.R., in 1925. Most of his service with that company was in the Overseas & Continental Traffic Manager's Office, and in 1935, with Mr. John Elliot, then Assistant General Manager, Southern Railway, he visited America and Canada; it was two years later that he took up his post in New York where, at the outbreak of war, he remained at the special request of the British railways. In the course of an appreciation in *The Times*, a former colleague (J. E.) writes that Colonel Turner always completely understood his hosts abroad, and was beloved by them; in New York, above all, by his energy and enthusiasm, and by his endless good humour and friendliness, he quickly became a leading figure in the American travel world; and that his many friends in that country and at home would remember him as a fine railway officer, a trade ambassador of high degree, and a sterling character. The cause of Anglo-American friendship had lost one of its happiest leaders. A portrait and biography of Colonel Turner appear on page 311.

Great Western of Brazil Railway

Gross traffic receipts in currency for the year 1942 and also net receipts reached the highest level since 1929. While the tonnage of the two principal crop traffics of sugar and cotton products, amounting to 1,264,422 tons, showed a decrease of 268,426 tons, receipts from other traffics substantially advanced because of the temporary reduction in road competition, the growth of military activity, and the higher tariffs. Debenture interest and other charges were met with a surplus of £35,427 which compares with a deficit of £6,595 for the previous year.

	1941	1942
Miles open	1,028	1,030
Passengers	3,658,035	3,945,191
Total tons	2,418,850	2,221,874
Non-kilometres	167,011,381	172,191,392
Operating ratio, per cent.	78.99	73.02
Passenger receipts	£119,996	£154,109
Goods traffic receipts	391,985	447,733
Gross receipts	546,235	644,992
Working expenses	431,460	471,021
Net receipts	114,775	173,971

The additional strain put upon the track and plant by the increase in traffic has been considerable, and the urgent need of financing renewals has induced the directors to propose a new scheme of arrangement.

Military Rank on the Russian Railways

In the U.S.S.R. wide recognition is given to the fact that railway transport is the right-hand of the Red Army, and that railway workers have played, and are playing, no small part in the outstanding successes on the Eastern Front. In a recent leading article in *Pravda*, comment is made on the Decree of the President of the Supreme Soviet of the U.S.S.R. establishing military titles and rank for railway staffs, and recording the essential interdependence of the railways and the fighting forces, as the former assure the movement of military supplies, and bring ammunition and weapons to the front line. The new titles, to which we make reference at page 313, are not easy of translation, but they may be rendered approximately as General-Director (or Higher Commander); Director-Colonel (or Senior Commander); Director-Lieut.-Colonel (or Intermediate Commander); Engineer-Major, Engineer-Captain, and Engineer-Lieutenant (comprising the junior commanding personnel). The non-commissioned ranks are to have the titles of Senior Brigadier and Brigadier, and all other railwaymen are to be known as Railway Transport Workers. The article in *Pravda* recalls that last April a state of martial law was introduced for all lines in the Soviet Union, at which time all staff, both clerical and otherwise, were declared to be mobilised for the duration of the war, and reserved for railway transport work. It is added that discipline improved noticeably. The new Decree is described as a Government measure directed towards strengthening personal responsibility.

Thefts Retard Better Train Lighting

Considerable prominence has been given in the daily press to the fact that the railways have been authorised to improve their train lighting and that it was hoped to complete the working before the winter. Now, however, we learn that the task is being handicapped seriously by the theft or damage of electric light bulbs and fittings, and it is likely that the resultant delays will be laid to the charge of the railways, whereas they are unwilling victims. Some statistics of recent depredations are given at page 313. Already much valuable labour and material has been expended on lighting improvements to make night travel more pleasant, but the result is being jeopardised by somewhat purposeless dishonesty, as train electric bulbs, being of very low voltage, are unsuited for most domestic purposes. Blinds are also being stolen at an alarming rate, and this has a widespread effect, for it must be remembered that, where train

lighting arrangements require all blinds to be drawn after blackout, one missing blind in a train necessitates the guard turning out all the lights by his master switch, and lighting cannot be reinstated until a station is reached and the bulbs are removed from the compartment with inadequate blinds. Special steps are being taken by the police to deal with offenders, and, in 46 recent prosecutions, fines as high as £5, with 3 guineas costs, have been imposed in the South of England.

Bifurcating Scales for Railway Rates

Mr. Roger Gibb, who recently suggested in an article in our columns that there should be a railway freight classification for void weight, in this issue makes a further suggestion for amending railway rate practice. He points out that it is the exceptional rates rather than the standard rates which complicate the English charging system, and he feels that those who advocate a reduction in the number of railway freight classes are fully justified so far as their advocacy concerns short-haul traffic. Instead of reducing the 21 classes into which goods are divided for railway charging purposes, Mr. Gibb suggests that over short distances a bifurcating scale should operate, and he gives examples of how this might be done on page 308. He emphasises that his proposed scales are not designed for small consignments and that they are intended for station rates and not to private siding traffic, which he urges should be considered as station traffic, to which an additional charge should be added for delivery, as is general railway practice outside this country.

Canadian Steel

An effect of the war on Canada, as on many other countries, has been to make manufacturers utilise local resources as far as possible. Some 2-8-2 locomotives recently built for the Canadian Pacific Railway by the Canadian Locomotive Company are of particular interest by virtue of the fact that they are reputed to be the first in which boiler-shell plate and tender-tank plate of Canadian manufacture have been used to any considerable extent. These materials previously came from the United States and England. The twenty locomotives which comprise the order are quite orthodox in other respects. Each has 22 in. by 32 in. cylinders, 63 in. driving wheels, and boiler pressure of 275 lb. per sq. in., and develops a tractive effort at 85 per cent. b.p. of 57,500 lb. A maximum travel of 7 in. is given to 12 in. piston valves by Walschaerts motion. Evaporative heating surface is 3,436 sq. ft., of which 310 sq. ft. is given by the firebox. The superheater surface is 970 sq. ft. and the grate area is 70.3 sq. ft. The total weight of reciprocating parts on each side of the locomotive is 1,170 lb.; an overbalance of 35 lb. is applied in each main wheel; and the overbalance in each of the other wheels is 223 lb.

Rules for Holiday Travel

A series of rules has been laid down by the United States Office of Defense Transportation in the hope of checking civilian holiday travel in that country. Holidaymakers were asked to take their holidays in the autumn or winter months, rather than July or August, and in one unbroken period rather than splitting them into a number of shorter spells; they are also asked to go to one place and to remain there, and to choose a location as near their own homes as possible. A second injunction as to time is to travel on Tuesdays, Wednesdays, or Thursdays rather than at week-ends. Baggage should be limited to a minimum of hand luggage, and if heavy luggage must be taken, it should be "checked," or registered through. Overnight trips should be avoided, so that the limited Pullman sleeping accommodation may not be overtaxed, and on day trains "coach" instead of Pullman travel is recommended, and packed lunches rather than attempts to obtain food in congested dining cars. Travellers are exhorted to remember that arrivals may be late, that crowded trains are certain, and that many normal travel comforts will not be available; also that seasonal additions to train services are not being made, and that they should be prepared to make last-minute changes in their travel plans on account of emergency withdrawals of scheduled services. The reason given for these injunctions is that over two million troops are being moved monthly over the railways, requiring the use of more than half the Pullman sleepers and nearly one-quarter of the day coaches; and in addition, roughly another two million servicemen are travelling monthly on leave.

Multiple-Aspect Junction Distant Indications

In Great Britain the long-established principle of indicating the direction to be taken by an approaching train at a junction continued to find favour after the introduction of multiple-aspect signalling and the position-light "junction-indicator," widely used in recent work, was adopted as a simple means of indicating the route set up and, at the same time, of reducing

the colour-light aspects to a minimum. The aspects to be exhibited at the signal in rear of that carrying the indicator have been the subject of much discussion at various times. In many cases they do not give any precise information on the way in which the route is set at the junction. They give merely a caution or attention aspect when a diverging movement is to take place. In the former case the junction signal itself often is held compulsorily at red by track circuit control until the train is approaching it. The L.M.S.R., however, has found it advantageous to the expeditious handling of its heavy mixed traffic at certain locations to give directing distant indications, obtaining the equivalent of the semaphore-signal arrangements previously in use and retaining facilities which the Operating Department preferred not to see withdrawn. An article at page 305 explains the methods used in doing this and illustrates a recent typical example of their practical application.

Long-Lap Valves

It seems paradoxical at first sight that using a slide or piston valve with greater steam lap should lead to an increased port opening for any given point of cut-off, even though the valve travel in full gear be practically the same as before. The explanation is not difficult to fathom, however, if the case be examined with the help of the Zeuner diagram. For a given gear setting, the long-lap valve will give earlier cut-off than a short-lap valve, and also a smaller port opening; to defer the point of cut-off with the long-lap valve it is necessary to advance the gear and give the valve longer travel. When this is done the port opening is increased well beyond that for the short-lap valve at corresponding cut-off. There is the inevitable "snag"; with the gear more advanced for every cut-off position it follows that the full-gear position will be reached at an earlier cut-off than is normally considered desirable for starting. This drawback is often gladly suffered for the sake of gains in power at speed. Incidentally, the valve travel for mid-gear position can be increased only by making some change in the gear. With the Stephenson motion the eccentrics will need to be advanced a little; with the Walschaerts or Baker gear the short arm of the combination lever will need to bear an increased ratio to the long arm.

4-4-0 Locomotives

In the locomotive history of this country few wheel arrangements could be considered as more typical of past British express passenger practice than the 4-4-0, of which some thousands in all were built. Doubtless the excellence of British coal, and the relatively small fireboxes needed for its consumption, in part have influenced this lengthy adherence to the 4-4-0 wheel arrangement; the cheapness of coal in earlier days, too, was probably not without its influence in securing the perpetuation of the small-boiler large-cylinder designs of this era, which with the help of long cut-offs and a furious blast, and often, also, the accompaniment of much cinder-throwing, could achieve some remarkable feats in relation to their modest dimensions. Few of those acquainted with the difficulty of the route will fail to recall with astonishment what the Great Eastern Railway used to do with non-superheated 50-ton "Claud Hamiltons" on the Norfolk Coast Express—a train with a minimum of 12 bogie vehicles, and up to 13 or 14 at week-ends, weighing gross nearly 400 tons behind the tender, booked to run at 54 m.p.h. over the 94 miles between Shenfield and Trowse, and to negotiate without assistance some extremely steep grades at both ends of the 130-mile non-stop run between Liverpool Street and North Walsham. The 60-ton L.N.W.R. "George the Fifth" 4-4-0s were another class that won great renown by their work in relation to their dimensions.

Non-Talking Compartments

Among those little things which are sent to try us are two which affect, among others, the railway traveller; although, of course, they are not the fault of the company. These are the irritations caused by the talker and the window-opener. For the latter there is no remedy except that strength of character and will possessed by Empire builders and their like, which is able to convince the horrid fresh-air fiend that the compartment is, on second thoughts, a trifle chilly. The talker, however, presents a problem which could be overcome. It has been pointed out already in these columns that the railways are almost alone in providing a haven for the non-smoker from the fumes he hates. Would it not be possible for them, as part of their post-war programmes, to confer an even greater blessing on mankind by ensuring for the busy man peace in which to work—or to study world events as reported in his newspaper, and not as forecast for twelve months hence by his fellow-travellers? In accordance with club practice, certain compartments could be marked "Silence."

Special Class Salaried Staff

WHEN we commented in our issue of July 2 on the fact that payment had been authorised as from April 26, 1943, of the full war advance to railway salaried staff in receipt of salaries between £500 and £1,000 per annum, we referred to two relevant matters which still awaited determination, namely, the questions of payment for annual leave which it is not possible to take, and payment for overtime. We now learn with satisfaction of the decision that where staff receiving between £500 and £1,000 per annum are prevented by the exigencies of war from taking the full period of annual leave to which they are entitled, they shall receive payment in respect of the period of leave not taken on the same basis as staff with salaries ranging up to £500. While this decision will be welcomed by the staff concerned, although it only operates from January 1, 1943, we take this opportunity of reiterating our view that the responsibilities now carried by senior railway staff in receipt of salaries over £1,000 more than justify similar treatment being accorded them, both in connection with the war advance and payment for holidays not taken.

With regard to the proposal that overtime should be paid to staff receiving more than £500 per annum, we had previously indicated that certain complications were inherent in any such innovation and are therefore not surprised to learn that this proposal has been declined. This keeps the position of the railway staff concerned in line with comparable staff in the Civil Service, but, as we showed in our issue of August 13, the conditions of employment of salaried railway and civil servants differ so widely as to afford little justification for letting civil service conditions be the guiding principle only in those cases where they operate to the disadvantage of railway staffs.

Railway Development in the Belgian Congo

ONE result of the present war is likely to be that special benefits will accrue to some countries in which fresh industries have sprung up, and existing ones have been developed, demanding increased and improved methods of communication by road and rail. The Belgian Congo, with vast natural resources waiting for increased means of production and improved facilities for transport; has come to the forefront of countries which, through their exports of various articles of vital importance to war products, merits special consideration from the point of view of communications. The regions to be traversed are so vast, and the country itself presents such formidable obstacles both from swamp and forest, that existing areas of production are of necessity somewhat limited. With improved transport, however, it is to be expected that a further considerable increase of production will result, demanding in its turn greater and more convenient means of transport from the interior to the coast. Except for the railway from the seaport of Matadi on the River Congo, Leopoldville, the capital of the Belgian Congo, is without land transport with every other region. Port Francqui on the River Kasai, a tributary of the Congo, is the railhead on the Congo to Cape Town railway, via Bukama, Elizabethville, and Bulawayo, and there is no connection between Leopoldville and Port Francqui except by river steamer.

From Bukama travellers can reach Dar-es-Salaam, on the east coast of Africa, by river steamer down the River Lualaba as far as Kabalo, whence a line runs to Albertville on Lake Tanganyika, which is crossed by lake steamer to Kigoma, the railhead on the Tanganyika Railway from Dar-es-Salaam. Between Stanleyville and Kabalo there are short lengths of railway from Stanleyville to Ponthierville and from Kindu to Kongolo, and the gaps are bridged by river steamers. A railway extension eastward from Stanleyville to join the Uganda Railway system is under consideration, and a route has been surveyed. The scheme was held in abeyance because of the then urgent necessity to complete the line from Elizabethville northward to Port Francqui. It is probable that the construction of the Stanleyville—Uganda line will be put in hand as soon as possible after the war, as it would greatly facilitate travel between these two widely separated flanks of the great Continent. Stanleyville itself is included in a comprehensive project for railway extension in Africa, and, according to the original French plan for a railway across the Sahara Desert, would be the focus of lines converging from East Africa, the shore of the Mediterranean, and the Cape. The positions of the various railways in Central Africa were shown on the map we published at page 558 of our June 4 issue.

At Bukama, on the River Lualaba, the railway is carried across the river on a girder bridge of four large spans resting on

concrete foundations sunk in the bed of the river. The line is single, and of 3 ft. 6 in. gauge, which is standard for southern Africa. The rails are 10 metres in length, weigh 29 kg. a metre, and are fixed by keys to iron sleepers 1.75 metres long. The maximum radius of the curves is 200 metres. The maximum permissible axle load is 15 tons. The railway bridge has a total length of 250 metres; the four spans are each 62 metres in length, and each weighs 210 tons. This bridge, which took two years to construct, is shown in the illustration on page 309. The importance of closing the gap between Port Francqui and Leopoldville has ever been borne in mind, and a route some 800 km. in length has been surveyed along the left bank of the River Kasai. The construction of this line, which would fill up the gap between Matadi and Cape Town, will be of enormous advantage in transporting copper from the Katanga region to Belgium, *via* Matadi, instead of sending it by the detour through Rhodesia to Beira and thence by the long sea voyage round the Cape, or the shorter but more expensive route through the Suez Canal.

In planning railway development in the Belgian Congo, the great triangle Leopoldville—Port Francqui—Bukama, Leopoldville—Stanleyville, and Stanleyville—Bukama, has been taken as a base of operations from which lines will radiate in order to open up the country. Branch lines are envisaged as and where natural resources are to be developed. Most of the existing branch lines are of 2-ft. gauge, with rails weighing 9.5 kg. The train load is usually limited to 70 tons. Light locomotives are employed, and rivers are crossed by iron bridges on concrete foundations. Generally, railway construction should present no overwhelming difficulties. There are a few hilly districts, but for the most part the lines would run through dense tropical forests which are largely inundated by floods in the winter. Labour is scarce, by reason of the large numbers of otherwise available men who are engaged in carrying loads. In the construction of the Matadi—Leopoldville railway, for instance, everything was carried by porters, of whom great numbers were required for this duty alone, leaving but few for the actual construction. So acute was the labour question that numbers of men were imported from Dakar and other places on the West Coast. The health of the labourers received special attention, and the highly efficient *Service Sanitaire* catered specially for the native population; it is fully equipped with hospitals and everything necessary to ensure the health of the men.

♦ ♦ ♦

Signalling and the Indian Rule Book

THE close connection between signalling principles and practice and the wording of the standard rules and regulations needs no emphasis. All who are concerned with the practical application of signalling methods and systems know how essential it is to have clearly-framed rules, the wording of which has been based on experience and mature deliberation, arranged to cover any situation likely to arise in ordinary operation and capable of guiding the staff in such emergencies as may reasonably be expected to occur. A study of the rule books of, say, 50 years ago shows that changing conditions have necessitated many revisions, generally in the direction of extending rules, to cover contingencies not at first taken into account. In numerous cases rules remained in force for some time after they had become impracticable and were tacitly being ignored. For a long time, for instance, on some railways the rules governing the meaning and observance of distant signals remained worded in such a way that the trains could not have been worked as they were had they been literally obeyed. Occasionally, after an accident, the wording might be appealed to, but it was nevertheless clear that it was inconsistent with the expeditious handling of the traffic. Later it came to be more clearly acknowledged that it was dangerous to retain an impracticable rule, and today the wording of all rules and regulations is very carefully considered by those responsible for agreeing to it. When revision proves necessary there is no hesitation in recommending it.

That on railways in other parts of the British Empire this question also demands most careful attention is shown from a recent contribution to the *Quarterly Technical Bulletin* by Mr. A. C. Slater, Signal Engineer of the Madras & Southern Mahratta Railway. Operating conditions in India are necessarily very different, especially on the single-line routes, from those here, and the employment of native staff is an added difficulty. All rules and regulations carry Government sanction with them and the complete rule book applying to what we may term main-line railways is a good-sized volume. The present edition was issued in 1929, the third revision in the present century. Two chapters—which concern signalling—have been under revision since 1937, and it is not yet known when the agreed alterations will be formally issued. Their effects can be estimated, however,

and Mr. Slater reviews them and shows how they may be expected to re-act on the signal engineer's work. He rightly observes, in commenting on the difficulty of framing rules, that they "can apply only to typical situations and efforts to make them sufficiently comprehensive to cover every possible set of circumstances are bound to fail." At one time in India there was a great diversity of practice in signalling among the various railways and, at the instance of a then well-known government officer, Mr. C. W. Hodson, steps were at last taken to end the confusion, with the result that in 1906 the general rules appeared substantially in the present form. The division of station or signalling layouts into three main classes, "A," "B," and "C," each with a defined complement of signals, has since exercised a leading influence over the whole question and must continue to do so.

It is not surprising to find that Mr. Slater considers there are still some inconsistencies in the rules and also that certain problems raise the same lively discussions in India as they do at home. Should sighting distance be taken into consideration when estimating the position in which to place a caution signal—the "warner" in Indian 2-aspect signalling—with respect to the stop signal it announces? Mr. Slater feels that it should, but points out that this controversial matter is probably one of those where "under different circumstances both opinions are correct." Under "B" class working on sections where the view is always clear and good, Indian drivers are admittedly accustomed to acting on a signal indication upon sighting it at a considerable distance. They might therefore reasonably be relied on to act on a warning aspect before actually reaching it. The sighting of signals at long distances is, however, impracticable under some conditions and a caution aspect must then be located to take this into account. The revision in the rules now contemplated is based on this latter principle and will apparently necessitate re-locating signals at many stations.

Some complication in following the revision arises, it would appear, from the use of both "free" and "locked" outer signals. With "locked" outers a lowered outer indicates a lowered home. The Indian rules make use of the term "adequate distance" when defining the overlap which must be clear before a certain signal is lowered, but Mr. Slater holds that the practical interpretation of the term is not always made sufficiently clear and that even when a distance is prescribed there are locations where the stipulations of some rules overlap each other and it is not too clear which ought to prevail. We feel it might be satisfactory to retain a term like "adequate distance" if the rules also made provision for the issuing of a special instruction for each station admitting of no dispute, as in Germany, where, for example, the exact point of clearance for giving "out of section" is expressly defined for every line at every signal box and exhibited on a prominent notice therein. This eliminates the risk, to which Mr. Slater refers, of leaving the man on the spot to use his judgment since "his idea of a distance sufficient to ensure safety may not be entirely correct." The issuing of special instructions modifying the Block Telegraph Regulations at certain signal boxes is, of course, established practice here. Some of the difficulties encountered in India could no doubt be at least much diminished by the adoption of multiple-aspect working, as some have recognised, but there, as here, engineers cannot always instal what they would like to. On the whole we feel that the English operating officer has something to be thankful for in not having to wrestle with the problems which have arisen from the combined outer and warner signal, little suspected by its originators.

Mr. Slater has something interesting to say about "repeater" signals, on which he finds the revised rules not worded quite to his liking, at least as to multiple-aspect signalling areas. The Indian rules we have give a diagram of a sort of floodlit banner signal for use as a repeater, but to what extent this has been used in India we are not aware. The banner type of signal with black arm, which can be cut to the shape of the signal arm it announces, has been found effective and is now generally adopted in Great Britain. It meets Mr. Slater's wish for something entirely distinctive from other signals and serves merely to indicate whether the signal in advance is or is not "on." We agree with Mr. Slater that this is all a repeater signal need do, the running signal aspect being read by the driver for itself when he comes to it.

Mechanically worked banner type signals are in use in Ceylon. He has himself constructed and used with success an electrically operated indicator exhibiting the word "on" or "off," outlined in reflecting lenses. A few stations on the South Eastern & Chatham Railway had indicators of this type repeating advanced starting signals in tunnels, and the idea has taken another form in some illuminated starting signal indicators under platform awnings. Another view expressed by Mr. Slater with which we concur is where he asks that the definitions given to multiple aspect signal indications shall not give a premature instruction to a driver but shall only say what indication, and hence course of action, is to be expected at the signal in advance, leaving the

order conveyed by that signal to be interpreted by itself and acted upon for itself, without reference to something previously seen, conditions always being liable to change. The restrictive effect of an indication should certainly not be reduced by one sighted earlier.

Mr. Slater's article covers much more than we have space to refer to and we anticipate reading interesting comments thereon from the Signal Engineers of the other Indian railways. The *Quarterly Technical Bulletin* provides an open forum for an interchange of views on every phase of railway engineering and operation and informative discussions on signalling frequently appear in it. We hope that Mr. Slater's wish to see one provoked by his contribution under notice will meet with an adequate response.

Railways in Brazil

SINCE the railways of Brazil were placed under the control of the National Department of Railways, which, under a Presidential Decree, replaced the Federal Inspectorate of Railways more than a year ago, appreciable progress has been made in co-ordinating rail, road, and river transport, and also in the construction of new railways, renewal of old track, and acquisition of new locomotives and rolling stock. The National Department of Railways has pursued in general the National "Highways" Plan of the Ministry of Transport & Public Works. Despite wartime difficulties, numerous works have been completed since April, 1941, especially on the railways in the north, a region of strategic importance with raw materials in great demand for the furtherance of the war effort of the Allied Nations. To meet the heavier calls on railway transport some 662 km. (410 miles) of rails, together with 26 locomotives and 458 wagons have been obtained from the U.S.A. and distributed among the Madeira-Mamoré, Bragança, S. Luiz-Terezina, Ceará, Rio Grande do Norte Central, and Great Western Railways. The requirements of the Leste Brasileiro, Baía and Minas, Goiás, Paraná-Santa Catarina, and D. Tereza Cristina Railways have also been borne in mind.

The Madeira-Mamoré Railway is a single line linking up navigation on the rivers Madeira and Mamoré. Its track is in good condition, and it received two new Mikado locomotives last year. The Tocantins Railway (from Alcobaca) with only 32 km. (20 miles) of line laid, must so far be considered as a railway under construction. It is the subject of a special public works plan with a grant of Cr. \$3,000,000 for extension via the Itaboca Falls up to the port of Jatobal in the first place, and later up to Marabá, with a view to linking the navigation of the lower Tocantins River with that of the River Araguaia and the higher Tocantins. The Bragança Railway, along the north coast, represents one extreme of the Brazilian railway system. As it is intended to join it to the S. Luiz to Terezina Railway, the line must be equipped to cope with the consequent heavier traffic. Last year it received twenty 30-ton wagons and had 30 km. (19 miles) of track renewed. The S. Luiz to Terezina Railway was incorporated into the Central Piahy Railway in April, 1942, and its position in the midst of forests rich in babassú gives it at the moment an aspect of economic importance. The completion of a bridge over the River Paranaíba in December, 1939, facilitated the completion of the line up to Terezina, and thenceforward the extension continues satisfactorily. A deviation of the line between Caxias and Terezina has eliminated one of the worst sections of the old location, and the re-laying of 40 km. (25 miles) of rails has benefited train loading considerably. The railway has recently received 2 Mikado locomotives, 45 wagons of 30-ton capacity, and 12 of 25-ton capacity.

The Ceará Railway crosses the State of Ceará from north to south, joining the port of Fortaleza with Crato. Itapipoca branch is being extended to Sobral on the railway from Camocim to Crathetis. This junction line, and the extension of the Pombal branch of the Ceará Railway to Campina Grande in the State of Paraíba (also well in hand), where it will join up with the Great Western Railway, will establish a series of important through connections between hitherto isolated railways. In recent years the Ceará Railway has obtained generous grants enabling it to equip its workshops at Fortaleza, where heavy repairs are effected, and to relay 80 km. (52 miles) of rails and sleepers, in addition to stone ballasting the track. Since 1937, 8 locomotives, 166 wagons, and 28 passenger carriages have been supplied. A branch line, 16 km. (10 miles) long, has been opened for traffic between Porangaba and the new port of Mucuripe, and the 54-km. (34-mile) extension from Souza to Pombal (in the State of Paraíba, has been completed; the latter is the line now in course of further extension, via Patos, to Campina Grande. On the Rio Grande do Norte Central Railway which, by a State Decree of 1939, incorporated a part of the Great Western Railway between Natal and Nova Cruz, a

new line has been completed between Angicos and São Rafael, a distance of 45 km. (28 miles), and at present improvements are being effected on the acquired section between Natal and Nova Cruz by the relaying of 30 km. (19 miles) of rails and the reconstruction of numerous culverts and embankments. Two Mikado locomotives and 35 wagons were supplied to the railway last year.

The Bahia & Minas Railway, based on the port of Caravellas, has been in course of extension to Arrassuahy, but for a long time the work was halted when Engenheiro Schnoor was reached. Work has been resumed, and a year ago had progressed as far as Alfredo Graça. It is since understood to have been completed. In addition, 64 km. (40 miles) of new rails, 2 Mikado locomotives, and 65 wagons were received last year. Since its inception, the Maricá Railway (from Nictheroy, near Rio) has remained isolated from other railways and thus deprived of much of its economical value. Nevertheless, some 50 km. (31 miles) of new rails have been laid, and a 26-km. (16-mile) extension has been completed between Iguaba Grande and Cabo Frio. Earthworks of a further new line, between Cabo Frio and Rio Dourado (near Macahé, on the Leopoldina Railway), have been completed, with a view to providing a new outlet for the salt from the beds at Cabo Frio. Although the Rio Grande do Sul Railway is leased to the State of Rio Grande do Sul, in the extreme south of Brazil, the Federal Government gave a subsidy of 200 million cruzeiros in 1938, divided into yearly quotas of 20 million cruzeiros.

A number of important improvements recently completed include the deviations between Pinhal (near Santa Maria) and Cruz Alta, and between Bagé and Rio Grande; relaying 280 km. (174 miles) of line between Santa Maria and Barreto; duplication of the line between Gravataí and Navegantes; and stone ballasting, strengthening of bridges, and construction of steel coaches for passengers. A new branch line, 106 km. (66 miles) long, between Dom Pedrito and Livramento has now been opened for traffic. In addition, a new line 116 km. (72 miles) long has been finished between Santiago and São Luiz. The location of this line was selected in 1938 and building began in 1939. It includes 7 stations, and 7 reinforced-concrete bridges with spans varying from 100 to 400 metres. Despite the increased cost of all materials, the original estimate of Cr. \$24,802,295 for the undertaking has not been exceeded. The Rede Mineira de Viação has carried out several improvements, principally electrification. The section between Augusto Pestana and Andradina—108 km. (67 miles)—has been completed, and electric locomotives and transmission and contact lines have been received for the section between Barra Mansa and Angra dos Reis. Three new stations have been built, at Caxambú, Itanhandú, and Aureliano Mourão, and 220 km. (137 miles) of line have been relaid. The foregoing notes, read in conjunction with the article and map in our May 7 issue, give a good general impression of the widespread activities designed to extend and modernise the railway system of Brazil.

Station Accommodation

STATION accommodation has been severely taxed as a result of the war. At the larger stations, rooms have had to be set aside for A.R.P. purposes and many waiting rooms are now being used as First Aid Posts, control centres, and rest rooms for fireguards. Accommodation has also had to be found at many stations for the Railway Transport Officers located at the principal railway centres. Coincident with these extraneous demands for accommodation, there has been a considerable increase in parcels traffic with the result that parcels offices have been taxed beyond their capacity. The exceptional number of bicycles now being forwarded by rail has added considerably to the congestion and at many stations it has been necessary to provide additional accommodation for these articles. Cloakroom deposits have also shown heavy increases.

The establishment of aerodromes, ordnance depots, food depots, and other developments arising out of the war have resulted in a large increase in both freight and passenger traffic at many of the smaller stations, where the pre-war accommodation has proved quite inadequate to meet the demands. At many such stations it was the practice to deal with parcels traffic in the booking office, but wartime requirements have necessitated the segregation of the business to avoid congestion and enable the staff to deal efficiently with the increased business. Similarly, goods-shed accommodation has had to be extended at numerous stations and larger offices provided for the clerical staff. Old coach bodies have been utilised to a certain extent, but in many cases traffic demands have outgrown the relief afforded by such temporary expedients and it has been necessary to construct new accommodation notwithstanding the difficulties of labour and supplies.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Luggage on the Roof

60a, Green Lane, Northwood,
Middlesex. August 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to Mr. Kenneth Brown's letter in your issue of August 27, it may be of interest to state that Rule 33 of the Midland Railway Company's "Rules and Regulations," approved at a board meeting at Derby on June 7, 1871, has the following direction to the guard of a passenger train:—

"Previous to starting, he must take care that there are a sufficient number of carriages attached to the train; that they are properly cleaned, coupled, lamped, and labelled, that luggage placed on the roofs of carriages is properly and securely loaded and sheeted."

Yours faithfully,
REGINALD B. FELLOWS

The Midland Railway

London, W.1
September 10

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your recent excellent editorial "The 'Midland' Manchester" and the generous tribute paid therein to the former Midland Railway—brutally murdered by the amalgamations of 1923—must have warmed the hearts and stirred the memories of many, apart from those who were employed by this great railway. From which you will gather that I am one of those who feel that twenty years of grouping have produced "nothing so good."

With the Midland names you quote should I think be included that of Fowler, who proved so worthy a successor to Johnson and Deeley. And to the far sighted hotel policy, the superb rolling stock and the clean and smart stations of the Midland I would add the neat and well maintained signals and signal boxes, the general excellence of the passenger train services throughout the system, the high level of the poster and other advertising (which never stooped to the blatant conceit of adopting a label such as "The Premier Line") and, last but not least, the efficiency and *esprit de corps* of the staff, which undoubtedly helped to achieve the popularity of the Midland with traders and travelling public alike.

A Midland group containing the companies you mention, together with the Furness, the Stratford-on-Avon & Midland Junction and the C.L.C. (in which the G.N. interest had been

purchased) might well have set a pace that the other groups would have found difficult to maintain.

But amalgamations in which the State takes a leading part are usually characterised by a lack of imagination and complete disregard for tradition. God forbid that after this war history will be allowed to repeat itself so far as the railways are concerned.

Yours faithfully,
"MIDLANDER"

Crewe Works Centenary

21, Briarfield Road,
Tyseley, Birmingham.

September 16

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your paragraph "Crewe Railway Works 100 Years Old," in the September 10 issue was extremely interesting, but I was sorry to see one unfortunate little error which had crept in regarding the locomotive *Royal Scot*. This locomotive was not constructed at Crewe as stated, but was built by the Queen's Park Works of the North British Locomotive Co. Ltd. in July, 1927, and was the 23,595th locomotive built by that firm. The locomotive, together with the *Royal Scot* train, was exhibited at the Century of Progress Exposition at Chicago from May 25 to October 11, 1933, and not at the New York Fair in 1935 as stated.

Regarding the 6,623 locomotives built at Crewe it may be interesting to recall that the 5,000th engine (the 4-4-0 *Coronation*) was built in 1911 and the 6,000th engine 2-6-0 mixed traffic No. 2878 in 1930. Several locomotives not actually built at Crewe received Crewe Works construction numbers; these include the 20 4-6-0 "Prince of Wales" class built by the North British Locomotive Co. Ltd. in 1915, which were given Crewe Works numbers 5257 to 5276.

The 90 similar engines built by Wm. Beardmore & Co. Ltd. in 1921-2 were also given Crewe construction Nos. 5572 to 5661, whilst the engine No. 5845, with outside Walschaert valve gear, built by Wm. Beardmore & Co. Ltd. in 1924 and shown at the Wembley Exhibition of that year, was given Crewe No. 5752. This engine was specially named *Prince of Wales* for the Wembley visit and was Wm. Beardmore's 304th locomotive. It was the last L.N.W.R. design to receive a Crewe Works number, the following number (5753) being allotted to No. 4107, the first of a batch of L.M.S. 0-6-0 class 4 standard freight locomotives built at Crewe in 1924-5.

The final and last L.N.W.R. type locomotive to be built entirely at Crewe was Capt. H. P. M. Beame's 0-8-4 superheater tank engine No. 7959, which was built in January, 1924, and given Crewe No. 5751.

Yours faithfully,
A. RICHARDS

Publications Received

The Internal Combustion Engine

Edited by A. H. Franks. London: Sif Isaac Pitman & Sons Ltd., 39-41, Parker Street, Kingsway, W.C.2. 7½ in. × 5 in. 157 pp. Illustrated. Price 7s. 6d. net.—Though dealing with motorcar practice this book discusses general principles and devotes a chapter to the diesel engine, which the author prefers to call the compression-ignition engine. The illustrations are taken from A.E.C. and Leyland practice; they relate to high-speed power units of the type developed primarily for bus and lorry propulsion, but sometimes used in the lighter variety of railcar. Most of the chapters are devoted to the petrol engine and such allied subjects as ignition and carburation. A section deals with transmission components but the treatment is very elementary especially as concerns gearboxes.

The Steam Boiler Yearbook and Manual. Edited by Sydney D. Scorer, A.M.I.Mech.E., M.I.Mar.E. London: Africa House, Kingsway, W.C.2. Paul Elek (Publishers) Limited. 8½ in. by 6 in. 522 pp. 396 illus. Price 30s. 10d., post free.—Steam is raised for so many purposes in industry and from such a variety of fuels that many different types and sizes of boilers are needed. The efficient operation of such boilers demands the provision of instruments for the guidance of the operator, or, alternatively, of automatic

regulation for feeding and firing. It should occasion no surprise that there is needed a large book to deal with the subject of boiler management comprehensively. The present volume has been compiled by several specialists under the guidance of an editor who is himself conversant with boiler practice; it may, therefore, be considered as an authoritative and valuable addition to the literature on the subject.

Elementary Surveying. By A. L. Higgins, D.Sc. London: Longmans, Green & Co. Ltd., 43, Albert Drive, S.W.19. 5½ in. × 8½ in. 156 pp. Illustrated. Price 6s. net.—This work is, as its title implies, devoted solely to the elements of survey, and railwaymen must expect to find in its pages no mention of railway survey work. It deals in a straightforward manner with the ordinary methods and instruments used in surveying generally. The reader begins by being introduced to the first five principles of surveying by co-ordinates, also triangulation and general field work. Chain surveying is then dealt with, including plotting. Map plotting is described at some length, followed by field geometry, some 18 pages on levelling, and a short chapter on angular levelling. The use of the compass and plane table is ably handled by the author, not to mention a valuable dissertation on contouring. The work concludes with notes on areas and volumes and, finally, theodolite surveying, including descriptions of a standard type of instru-

ment and its method of handling. As in all previous chapters theoretical and field exercises are added for instructional purposes. It will be seen, therefore, that all ordinary phases of general surveying are covered in this 150-page text book, which is amply illustrated with line-drawings of instruments, diagrams and plans, the work being based mainly on the syllabus in Elementary Surveying in the General School Examination of the University of London.

Instruction Book for Government Utility Gas Producer (Marks VI and VII).—This booklet, issued by the Ministry of War Transport, relates to types of gas producer as fitted to Austin, Bedford, Commer, Ford, and Morris commercial vehicles. Working principles are comprehensively described with the aid of a large folding diagram showing the component parts partly sectioned. All that conversion of a petrol vehicle entails is clearly described with many illustrations. Operation calls for a special technique that is divided up under the heads of starting, driving, and, finally, idling and waiting. Maintenance receives detailed attention, not only day-to-day maintenance but also matters of routine to be carried out every 1,500 miles, every 4,500 miles, and so on. Fault diagnosis, dismantling instructions and useful hints conclude the technical sections. An appendix gives lists of area fuel organisers and bulk fuel suppliers in the United Kingdom.

The Scrap Heap

Members of the L.M.S.R. staff have collected nearly 100,000 used razor blades, the sale of which has raised £53 for the R.A.F. Benevolent Fund.

A guest at the official ceremonies inaugurating the new C.N.R. terminal in Montreal was Mr. W. B. Powell, who is 88 years of age, and who had just over 64 years' service with the Canadian National Railways and constituent and subsidiary companies. Mr. Powell saw four stations inaugurated in Montreal, one of which replaced the original terminal from which, in October, 1856, the first train set out from Montreal for Toronto over what is now the C.N.R. main line between those Canadian cities.

SELLING STEAM

A curious case was one brought recently against the Chicago Union Station Company for having exceeded the maximum price laid down by the Office of Price Administration for the sale of steam, which is 60 cents a 1,000 unit-lb. of steam. It was alleged that steam raised in excess of the quantity needed for use in the station was sold to the Post Office, General Electric Company, and Chicago Daily News Printing Company, at prices 1 to 3 cents in excess of the "ceiling" price. The Federal District Court fined the station company \$1,347, the total amount of the overcharge, but declined to agree to the O.P.A. demand for triple damages.

IRISH CROSS-BORDER SMUGGLING

A correspondent of *The Glasgow Herald*, dealing with smuggling on the Ulster-Eire border, writes that quite a lot of the smuggled goods are carried on the Belfast-Dublin trains, and smuggling "vests," in which a passenger can carry about 10 lb. of tea, have been seized by the hundred. The vests are made of linen, and are stitched in square patterns like an eiderdown after the tea has been evenly packed into them.

On one occasion a man was found to have 60 yards of electric cable wound round his body, while a few days later several cwt. bags of nails were discovered strapped under one of the coaches of the train.

Often the seats of the carriages have been ripped open, the articles packed in, and the covering neatly sewn up. But perhaps the most original method of avoiding the sharp eyes of the Customs officials was the use of a dummy fire-extinguisher which was fixed in one train. It had travelled up and down between Belfast and Dublin for months unnoticed—bringing cosmetics to Ulster and taking tea to Eire.

TRAIN DISPATCHING ON THE HIGHLAND LINE

Although the "crossing order" system of working single lines was used to a certain extent in the early years of railways in Great Britain it was never developed into an elaborate code of rules, such as found universal adoption in America. The nearest approach to anything of the kind was found on the old Highland Railway, where it long remained in service. In a report presented to the Government of India in 1893 by a Mr. W. H. Cole who was sent on a special mission to study railway operation in Europe, it is stated that the traffic over the entire Highland main line was regulated by a "dispatcher" or controller at Inverness, and the arrival and departure of

every train at every station was telegraphed to him and entered on his train register. Any change in the crossing arrangements had to be made by the stationmasters acting under his express instructions. There was, however, no "superiority" of trains as in America. To guard against errors the absolute-block system was worked by needle instruments from station to station, in addition to the crossing order system, and so successful did the combination prove that at the date of Mr. Cole's visit no passenger had been killed in a train accident since the opening of the railway in 1857. Nevertheless in due course the tablet system superseded these early arrangements.

A REMINDER

(Present circumstances do not permit any increase in the supply of paper and news-print.—Minister of Production)

We grant you that the present rate
At which our foes disintegrate
Some jubilation might justify.
But pray remember
That paper keeps in short supply.

The stuff is scarce, and that is why
Upon a quota we rely
To print the things you want to know.
And pray remember

The quota is *in statu quo*.
So read, mark, learn, and do not let
This paper light your cigarette.
Such waste in wartime were a sin.
Do please remember
The purpose of the salvage bin.

E. C.

CHILLS TO COME

From a group of regular travellers on a coast route comes a united wail—can nothing be done to put some form of "strap" on carriage windows? With the approach of winter travelling is going to be chilly if windows cannot be put up.

It is realised, of course, that in these days of leather scarcity it will be impossible to fix leather straps, but strips from old upholstery, or even short pieces of rope, might be used.

The railway companies' reply to all this may well be that the original straps were removed by "unauthorised persons," and that, consequently, they are not to blame for the discomfort of travellers. Nevertheless, that will not keep out the chill air.—From *The Glasgow Herald*.



[From the "Strand Magazine"]

By the courtesy of Mr. S. H. Whitelegg, lately Works Superintendent, St. Rollox, L.M.S.R., and the son of Mr. Thomas Whitelegg, one-time Locomotive Superintendent of the London, Tilbury, & Southend Railway, we reproduce the front cover



of the programme of a smoking concert held at Cannon Street Hotel by the London Tilbury & Southend Railway Company & Athletic Club. Mr. H. Doughty Browne, Chairman of the company, presided at the gathering, and is depicted at the top (centre) of the programme cover. To the left is shown Mr. Arthur L. Stride, Managing Director of the company, and on the right Mr. Cecil Newton, Secretary of the company.

EMPTYIES!

Some 12,000 cosmetic jars, 2,000 jam jars, 5,000 milk bottles, and 350 medicine bottles are among the million "empties" collected from L.M.S.R. trains and sent to the L.M.S.R. Bottle Reclamation Depot in Manchester. Half-a-million already have been sorted and returned to the bottlers.

TRAINS, TO THE RESCUE

Some troops in India belonging to a Welsh regiment were marooned recently, when their vehicles sank axle-deep in mud. The men struggled across-country to a railway and awaited a train. After dark the lights of one were seen and a signaller flashed an S.O.S. The train stopped and the position was explained to the guard, who reported the matter at the next station. For five days the men were supplied by rail with food, after which time the mud had dried sufficiently to allow their vehicles to move on.

TAILPIECE

(Plans for improved lighting of trains are being jeopardised by thefts of bulbs and fittings. Fines have been imposed)

Your modern Turpin and the railroad's blight
Steals first the bulb that is the source of light,
Then adds the shade, efficient and so neat,
And steals the blind to make the job complete.
No fine, plus costs, his punishment should be
Who robs his fellows of the means to see.
To fit the crime, the penance should entail
A spell of outer darkness—known as jail.

E. C.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Unauthorised Forms of Travel

In the Central Assembly recently it was asked what steps the Government contemplated taking to stop occurrences such as that which involved the deaths of two people travelling on the footboard of a train by being dashed against a signal post.

Sir Edward Benthall, War Transport Member, Government of India, replied that he was satisfied that railway staffs did everything possible to stop this unauthorised form of travel, and that he hoped the publicity given to this case would discourage the public from risking their lives in future. He explained the practical difficulties involved in putting a stop to this practice, and said that if persons travelled in that manner they must take the consequences. When asked whether such travelling was not due to congestion, Sir Edward replied that the railways discouraged over-crowding.

N.W.R. Timetables

With the introduction of the new timetables on October 1, night running for passenger trains will be reintroduced between Reti and Hyderabad, Sind, on the North Western Railway (night running was suspended in May, 1942, after the wrecking by Hurs of No. 7 up near Tando Adam). Under the new arrangements, No. 8 down mail will leave Lahore at 9.35 a.m. and arrive at Karachi at 11.30 a.m. the next day; No. 7 will leave Karachi City at 4 p.m., and arrive at Lahore at 5.40 p.m.; and Nos. 9 up and 10 down mails between Quetta and Karachi City will run between Quetta and Rohri only and will connect with the Lahore-Karachi mails at Rohri.

As during last winter, one mail-and-passenger railcar will run on the Kalka-Simla section (in peacetime no railcars operated over this line during the winter).

UNITED STATES

The Congressional Derailment

The Congressional of the Pennsylvania Railroad, which, as briefly recorded in *The Railway Gazette* of September 10, was involved in a disastrous derailment near Philadelphia on September 6, is the fastest and best known of the hourly expresses on the fast New York-Philadelphia-Baltimore-Washington service. Leaving New York at 3.30 p.m., and Washington at 4 p.m., this train makes the run of 225 miles in each direction in 3 hr. 35 min., including stops at Newark, North Philadelphia, Thirtieth Street (Philadelphia), Wilmington, and Baltimore, with very fast point-to-point timings. The accident occurred on the journey into New York, on the North Philadelphia-Newark section, a distance of 76 miles scheduled to be covered in 64 min., at an average speed of 71.3 m.p.h. start to stop; here, as over practically the entire route, in both directions, sustained speeds of well over 80 m.p.h. are required. Electric motive-power is used throughout.

A broken axle of a dining car in the front part of the train resulted in the derailment of this vehicle, and the majority of those behind it. The train is always of lengthy formation, and an Advance Congressional frequently is run. Latest reports state that 78 passengers lost their lives. An investigation is in progress.

The Twentieth Century Derailment

It is remarkable that, during the night after the derailment of the Congressional,

the Twentieth Century Limited of the New York Central System was derailed, although with less disastrous results (this accident was recorded briefly in *The Railway Gazette* of September 17, in which issue reference was made also in an editorial note to the Twentieth Century Limited and to the Congressional). The accident occurred near Canastota, New York State, 269 miles from New York, on the Albany-Syracuse section of the main line, during the run to New York. The derailment is attributed to an explosion on the locomotive, and, although the possibilities of sabotage are being investigated, there is at present no evidence of such a cause. The Twentieth Century Limited gave for many years a 20-hr. service between New York and Chicago, but at the time of the entry of the United States into the war was running to a 16-hr. schedule over the 958 miles, all intermediate stops included; it since has suffered a deceleration to 17 hr., but remains a very fast train. Save for the 33-mile journey between New York and Harmon, for which electric working is provided, steam power is used throughout, with streamlined locomotives of the 4-6-4 type. Several years ago trains of luxurious streamline stock, exclusively of single-room vehicles of various types, with dining and lounge accommodation, were introduced on this service. On the occasion in question, five carriages were derailed, but only three lives were lost.

The Lackawanna Limited Collision

A serious accident, within eight days of the two described above, befell the Lackawanna Limited of the Delaware, Lackawanna & Western Railroad on August 30, as briefly recorded in *The Railway Gazette* of September 10. At Wayland, New York State, 311 miles from the Hoboken terminal in New York, this express came into collision with a light engine, and 27 passengers were killed and about 150 injured. The Lackawanna Limited runs between New York and Chicago, but the heavily-graded route and numerous stops make it a slower train in overall time than the Twentieth Century Limited, Broadway Limited, and other famous services of competing companies; although the allowance is 22½ hr., however, the Lackawanna Limited has some speedy point-to-point bookings. The schedule for the 32.9 miles from Bath to Dansville, in which section the collision occurred, is 36 min. from start to stop.

ARGENTINA

Professional Meetings

At the monthly meeting for July of the River Plate Branch of the Institution of Mechanical Engineers, held in Buenos Aires, Air-Commodore A. A. Walser, M.C., D.F.C., Air Attaché to His Majesty's Embassy, delivered a lecture on the rise and development of the Royal Air Force, with special reference to the research work carried out by mechanical and electrical engineers during the pre-war period in connection with aeronautical problems. Mr. P. Dawes, Chairman of the Branch, presided.

At the July meeting of the Buenos Aires Association of the Institution of Civil Engineers, Señor Emilio Frugoni, President of the National Roads Board, delivered a lecture in English on "Highway Construction in Argentina," illustrated with charts and graphs. The Chairman of the Association, Mr. D. G. MacCormack, B.Sc.,

M.Inst.C.E., Chief Engineer, Central Uruguay Railway, presided; and the gathering included Colonel R. E. M. Russell, Military Attaché to His Majesty's Embassy, and engineers belonging to the National Roads Board.

Priority of Railway Traffic

A recent Government Decree establishes the following order of priority in the allocation of railway rolling stock: (a) for perishable goods for daily consumption; (b) for non-perishable goods of an essential nature for daily consumption in towns served by the railways; (c) for fuel and materials for the public services; (d) for fuel and materials for urgent public works; (e) for products for immediate shipment by ocean-going steamers; (f) for fuel and raw materials for use by essential private industries; and (g) for such other commodities as the Government from time to time may consider it necessary to include in the list of priority traffic.

The Decree lays down the procedure to be followed by the public and by Government departments in making wagon requisitions, which must give full particulars of the classes of goods to be carried, to enable the necessary classification to be made in accordance with the foregoing rules. The National Railway Board is responsible for ensuring the strict compliance by all parties with the regulations.

State Railways Wages

A Government Decree dated July 29 ordered that the salary and wage retentions amounting to 4½ per cent., put into force on the Argentine State Railways in October, 1942, as an emergency measure, should cease as from August 1, 1943. The State Railways staff is now on the same basis as those of the private railways, which already have cancelled these retentions. It is estimated that some 38,000 State Railways employees will be affected.

It is announced also that, as from July 1, an increase of wages, of 10 per cent. in the case of married men, and of 5 per cent. in that of single men, is to be granted to all State Railways employees earning less than 250 pesos a month. This is stated to be a provisional measure, applicable only while the high cost of living continues.

MANCHURIA

S.M.R. Results in 1942-43

Total receipts of the South Manchuria Railway for the year ended March 31, 1943, amounted to 1,106,000,000 yuan (and exceeded for the first time the thousand-million mark). Expenditure (including depreciation) was 1,021,000,000 yuan; and net profit amounted to 85,000,000 yuan, to which must be added 36,000,000 yuan brought forward. After providing for reserves and other items, a dividend of 8 per cent. was paid in respect of privately-owned shares, and of 4.43 per cent. in respect of shares owned by the Manchurian and Japanese Governments.

The higher traffic receipts are stated to have been due to the increased economic development of the country, rising production by heavy industries, more exchanges of goods between Manchuria, China, and Korea, and the increase in goods rates.

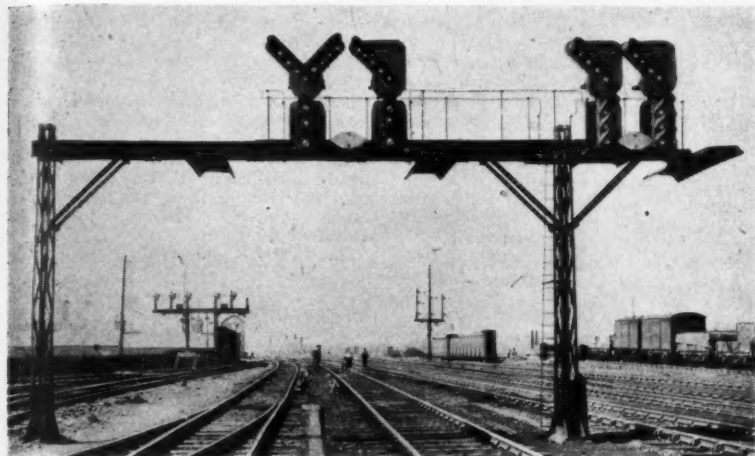
CEYLON

Free Railway Passes

The number of warrants for free travel on the railway granted to officers of the Government Clerical Service, and other public officers, has been reduced from three to one a year. Officers in the railway service who have so far been receiving six such warrants will now receive two only.

The Distant Indication under Multiple-Aspect Signalling

The use of junction distant signal indications in colour-light signalling has been found by the L.M.S.R. to facilitate the movement of trains, especially heavy freight trains



THE introduction of the colour-light signal in place of the time-honoured semaphore arm does not of itself involve any change in the system of signal aspects already in use. The substitution can be effected merely by replacing the semaphore lights by light signal units exhibiting the same lights as were seen by night under the older system of signalling, with all other working conditions remaining the same. This is then simply an engineering alteration, and the only practical difference for the operating staff is that a driver sees throughout the 24 hours the indications he has been accustomed to read at night. No new fundamental principles are therefore involved.

Although this course has been adopted on one main line in Great Britain, the more usual practice (except in the simple cases of isolated intermediate block signals inserted in semaphore-signalled areas) has been to adopt the multiple-aspect system of indications, under which each signal automatically reflects the condition of the next signal in advance directly the line is able to be signalled as being clear as far as that signal. Where the distance between signals requires it, this principle is extended to cover the condition of more than one signal in advance and thus three, four—and even at times five—aspect systems of indications have been employed, enabling signals to be located at relatively short distances apart and yet allow drivers of fast running trains to begin braking sufficiently far in rear of a stop indication to ensure obedience thereto.

This arrangement removes the difficulty associated with short sections under the old semaphore system, where conditions frequently necessitate giving a caution distant indication sooner than is needed by some classes of trains in order to cover the high-speed services adequately. The ease with which multiple-aspect colour-light indications can be controlled to produce this result makes them readily adaptable to the complicated layouts of lines frequently encountered in this country near the larger centres, and

they have been adopted in almost all important re-signalling works of recent years with uniform success. In one instance the headway necessary for express trains to obtain a clear semaphore distant indication when passing through a large provincial station was 7 min., although 5 min. was enough on the main route leading up to it, resulting in a check to all trains at holiday times and often in normal periods also. With multiple-aspect signalling this difficulty has disappeared.

Junction Light Signals

The application of multiple aspects to a succession of signals where no change of route can occur is relatively simple. In this case they serve train spacing purposes only; and the aspects have merely to be arranged at any instant so as to convey to a driver the condition of the signals in advance of each one as he approaches it. Where there are junctions, either running or crossover, several other factors require consideration. Although the speed signalling system of aspects has been used for some time at such locations in certain countries, notably the United States, British railways have been disinclined to depart from the well-tried practice of indicating to a driver the route set up for his train at a junction.

A speed system of aspects has been in use, however, at Mirfield, L.M.S.R., since 1932. In the earliest multiple-aspect installations in Great Britain the bracket type "geographical," or "splitting," arrangement of signal units was therefore retained, with symbol type route indicators at the entrance to terminal stations and at similar locations, adopting semaphore signal practice. At running or crossover junctions each route had its separate signal, able to give multiple-aspect indications for the route to which it applied. A certain amount of this signalling is still in service.

Although simple in principle and easy to understand, this arrangement was found to have certain disadvantages. Where the number of routes is considerable, a corresponding number of separate doll posts and signal units is re-

quired, which accentuates the difficulty of placing the individual units to the best advantage for observation, especially where parallel lines are only 6 ft. apart. The brightness of colour-light aspects also makes it difficult to provide adequate horizontal spacing combined with good sighting at a distance. To overcome these and other disadvantages, such as the presence of too many red lights, the L.M.S.R. tried the "speed" aspects at Mirfield, having vertically-arranged lights, and the L.N.E.R. at Thirsk the luminous "junction indicator." This consisted originally of neon tubes, later replaced by rows of lunar white lights, showing by their angle from the vertical, to right or left, the route set up and its order of divergence from the direct path, itself signalled by colour-light aspects alone. The junction indicator, usually exhibited over the accompanying colour-light unit, has been installed extensively during the past few years, and, having proved very satisfactory, was adopted as standard by the railway companies about seven years ago.

Although making use of it in recent new work, the L.M.S.R. has found it advisable to continue to employ "directing" junction signals of the earlier form at certain points, when re-signalling layouts such as those at Wigan, Crewe, Rugby, and other large junction stations. In some cases the importance of the



South Hampstead up slow intermediate block home signal with junction distant units

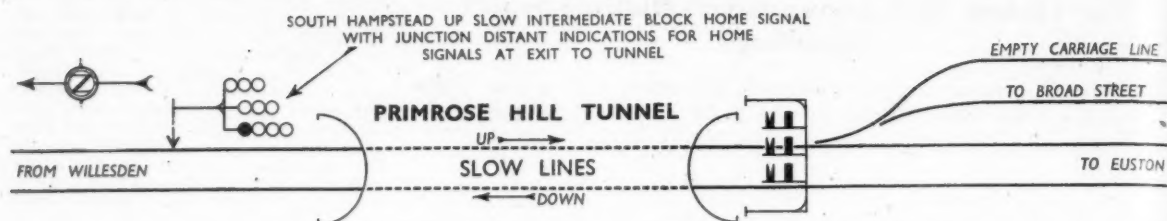


Fig. 1—Outline diagram of layout of up slow line, Primrose Hill Tunnel

routes is such that it is impossible to call one a direct route and the other a diverging one, and any allocation of a junction indicator aspect to one of them would be arbitrary. In one or two instances directing splitting signals have been used, each carrying a junction indicator reading to additional diverging lines along the principal route to which it itself applies, a

principles is required, but when a diverging route is to be taken at the junction the case is somewhat different. The position has been met in more than one way. The exhibition of a proceed aspect with the junction indicator showing is sometimes compulsorily 'delayed' by track-circuit control until the train has neared the signal, in which case the signal in rear

elaborate at a number of junctions on its system to enable trains, especially heavy freight and mineral trains, to be worked with the minimum of delay. It already used many junction distant signals, and on installing the colour-light system considered it necessary to find an equivalent for them.

The L.M.S.R. adopted a system of

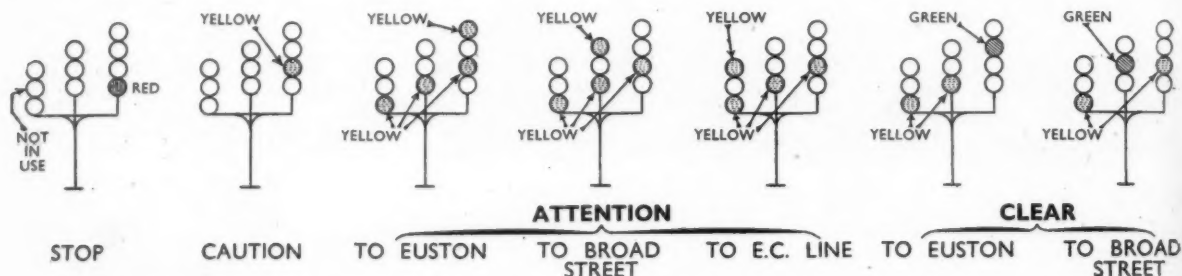


Fig. 2—Diagram of aspects exhibited by South Hampstead up slow intermediate block home signal

combination of the earlier and the later practice, as seen in the first illustration.

Junction Distant Indications

The junction indicator is of course applied to the junction home signal, itself composed of an ordinary multiple-aspect signal. There remains the question of what aspects require to be shown at the signal in rear to regulate the approach to the junction. For movements along the direct route no departure from ordinary multiple-aspect prin-

ciples is of course invariably passed at caution. In other cases there is no such restriction on the clearing of the junction signal, and the attention aspect is shown at the signal in rear, to limit the speed of the train through the junction. No actual route indication, equivalent to a bracket semaphore distant signal, is given in rear of the diverging point. These arrangements have proved satisfactory for certain forms of junction and types of traffic, but the L.M.S.R. has found it desirable to provide something more

directing junction distant indications at Mirfield and has continued to do so in later work, with complete satisfaction. An interesting and typical example of it is to be seen at the north end of Primrose Hill tunnel on the up slow line (as shown in Fig. 1) in the recently-completed Camden-Sudbury colour-light signalling. At the south end of the tunnel the line branches into three routes, to Euston, to Broad Street, and to the empty carriage line. The view of the junction home signals is necessarily re-

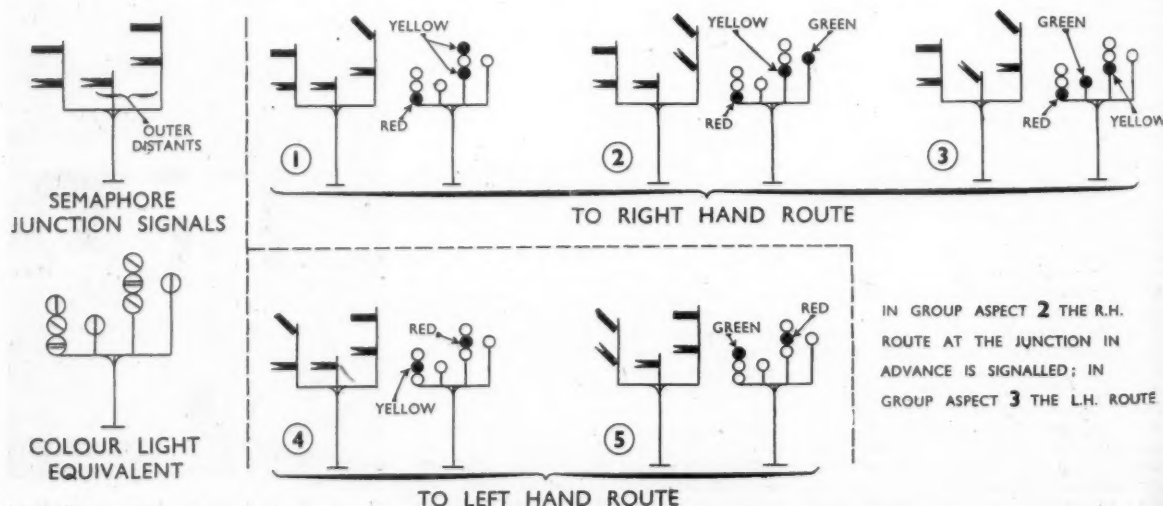


Fig. 3—Typical contour light equivalent for junction semaphore signals

stricted, and the Operating Department considered junction distant indications essential. Accordingly, they have been provided at the South Hampstead intermediate block home signal, as shown in detail in Fig. 2.

The second illustration is reproduced from a photograph of this signal, which consists of three dolls carrying multiple-aspect units. The stop (red) and caution (single yellow) indications are shown on the right-hand doll; the rest of the signal then remains unilluminated, as the condition of the junction in advance is immaterial. When, however, an attention or clear indication is required, it appears on the doll corresponding to the route signalled by the home signal in advance which has been pulled off, and a single yellow light is seen on each remaining doll, thus presenting a group aspect equivalent in effect to what would be obtained with a semaphore stop signal and junction distant below. The lights

seen, however, accord with multiple-aspect principles. The route the train is to take is thus announced unmistakably.

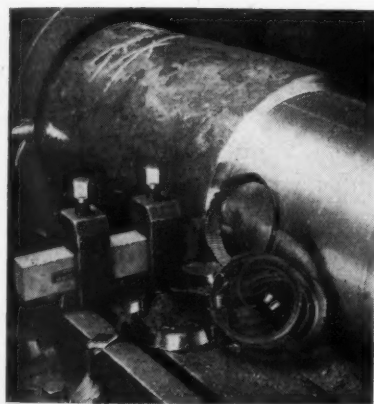
The precise manner in which the additional light units are mounted depends on the particular indications required by the layout. Thus, in some instances an ordinary multiple-aspect signal has a single green lens fixed on each side of it, one of which is lighted up in conjunction with a single yellow aspect in the main group when the junction signal in advance indicates proceed. The resultant group aspect then presents the lights seen in an ordinary two-doll distant signal. Fig. 3 is a diagram showing the application of these principles to a junction home signal where, under the semaphore system, the right-hand stop arm carries junction outer distant below it, and the left hand one a single ordinary distant. Study of this will show that directly the condition is reached in which the driver would find the semaphore distant arm off

(the stop arm above it being then in effect redundant), he sees a colour-light group aspect equivalent to a splitting distant indication with the home signal light above extinguished. By mounting the different lenses in the multiple-aspect units, as regards their colour, in various orders, and setting the supplementary single lenses at the correct heights, "stepping" is easily obtained and the relative importance of the routes, both locally and at the junction in advance, differentiated readily. The control of the various aspects is effected by standard methods without difficulty.

These arrangements have been found to meet the requirements of the Operating Department and to provide a means of handling a heavy mixed traffic with the maximum degree of facility through large stations where several main routes converge and numerous cross-over connections and parallel lines provide for a great variety of train paths.

Carbide-Tipped Tools

Improved carbides overcome troubles formerly experienced in high-speed turning



on the upper surface of the tool. Where the chip impinges the surface is eroded. This form of cavitation is not unfamiliar to those who have studied the breakdown of high-speed steel tools used for heavy cuts. The "cratering" effect occurs only when turning steel and the problem, therefore, does not arise when turning cast iron.

The trouble was eventually overcome by adding to the early hard metals one or more of the carbides of titanium, tantalum, niobium, and molybdenum. Under certain conditions, tools of this material would work for prolonged periods when cutting steel. They were found, however, to be relatively brittle compared with the normal tungsten carbides previously used. For successfully machining steel with these alloys, conditions had to be good; fine feeds and high speeds were the order of the day and only machines in good repair could give satisfactory results.

The research laboratories of Thos. Firth & John Brown Limited have carried out much research with this complex system of carbides and the result has been the development of the "Mitia"-brand hard metal which offers a grade suitable for almost any set of conditions. The latest addition to the list is Grade "TA.5,"

which may be said to complete the series. It shows great resistance to "cratering"; also it has the strength and toughness to stand up to the arduous conditions which it is designed to meet. Tools of this grade will take a top rake so that heavy cuts can be taken at high speed without the absorption of unduly increased horsepower. Used under ideal conditions this grade is of great value in the rapid machining of heavy forgings. It also possesses the advantage that it can be successfully used on machines not in the best state of repair and under conditions where high-speed steel would normally have to be used; in this application it gives increased tool life. The speeds and feeds recommended for Grade "TA.5" vary considerably, as an outstanding feature of the grade is its ability to operate over a wide range of conditions.

Speed and feed depend on the quality of the material being cut. For low-carbon steel the speed should be 125/200 ft. per min., and the feed may vary from .015 in. up to .125 in. per rev. For steels having a tensile of 40/65 tons the feeds used should be from .015 in. to .100 in. per rev. Steels of higher tensile have to be treated individually, as machineability varies according to the composition, heat treatment, and so on; in these cases advice and assistance as to the suitability of Firth-Brown grades and cutting conditions should be sought. The "Mitia" Carbide Grade Colour Chart, prepared specially for workshop use, is a practical guide to the application and maintenance of carbide tools.

EARLY experiments with tungsten carbide demonstrated very clearly that this material was to occupy an important place in the field of machining metals. However, the first carbides were of little use in the machining of any types of steel; these early tools failed by what is known as "cratering." This phenomenon is due to pressure of the chip

SAVING BLOTTERING PAPER.—A useful method of saving blotting paper has been adopted by Lloyd's & Co. Ltd., of Letchworth. A single layer of blotting paper is placed in each blotting pad, and under this are several sheets of newspaper, which absorb any ink seeping through. After it has served its turn, the newspaper is sent for salvage.

LEASE-LEND HAND TOOLS.—The Directorate of Hand Tools is extending the list of registered merchants for Lease-Lend hand tools and will receive applications for admission to the list from bona fide ironmongers and tool dealers who were in the trade before August, 1939. Applications should be made only by distributors who need American tools, and who are prepared to give an undertaking in accordance with Art. 1 of the Control of Hand Tools (No. 1)

Order, 1943. Application should be made to the Director of Hand Tools (HT2A), Ministry of Supply, "Woodthorne," Wergs Road, Tottenhall, stating the yearly value of all hand tools purchased for resale during each of the years ended June 30 from 1940 to 1943, and giving a general description of the types of tools.

BRITISH STANDARDS SPECIFICATIONS FOR BRASS BARS.—Below is given a list of British Standards specifications for certain brass bars, amendments for which have been issued. The amendments give modified tolerances for extruded bars. The increase in tolerances has been allowed as a war emergency measure in order to obtain greater life from the dies. Provision is made also for bars of rectangular section to be included in the specifications, but the tolerances to

be allowed on the dimension of the bars varies to such an extent, according to the shape of the cross section, that it has not been possible to give dimensional tolerances. It is specified that in all cases these should be agreed between the purchaser and the manufacturer. Copies of the amendment slip are obtainable from the Offices of the Institution, 28, Victoria Street, London, S.W.1. The amendments affect the following:—

- B.S.
249—1940. Brass bars (high speed screwing and turning).
250—1940. High tensile brass bars and sections (grades A. and B.).
251—1940. Naval brass (Admiralty mixture) bars and sections (suitable for machining and forging) and forgings.
252—1942. Naval brass (special mixture) bars and sections (suitable for machining and forging) and forgings.

An Introduction to Bifurcating Scales for Railway Rates

A suggestion for rating shorthaul traffic

By Roger Gibb, F.S.S., F.R.Econ.S.

Formerly Chairman of the Railway Commission of Southern Rhodesia,
Northern Rhodesia & the Bechuanaland Protectorate

IT has often been said that railway rates are too complicated. There is much to be said for this view, but though railway rates can be simplified with advantage, they can never be made simple without diminishing the usefulness of railways to a complicated civilisation. There are many ways in which rates can be simplified, but a drastic reduction of the 21 classes into which goods are divided for railway charging purposes is hardly one of them.

The adoption of 5 classes instead of 21 would almost certainly have the effect of increasing the number of exceptional rates that would be needed and it is the exceptional rates more than the standard rates that complicate English railway rates. A

my scales, but in this I may be wrong as a paper read to a meeting of the Institute of Transport in the Argentine or Brazil was so appreciative of the hint I gave, that these scales may be in operation in South America without my knowing it, and their adoption in England would not therefore be dangerously revolutionary. I cannot really claim to have invented these scales. The real credit for them ought to go to the French. The French politicians have always resented the idea of exceptional rates and they have made their use difficult on French railways. So the French have experimented freely with mileage scales which they employ in great profusion.

When I was in Paris in the 1920's

disagreeing with my more detailed proposals will not neglect the bifurcating principle on that account. The bifurcating scale is a rate-maker's tool and others may be able to use the tool with more skill than I can. My craftsmanship may not be as good as my tool.

In Fig. 2 I illustrate diagrammatically the picture of an up-to-date graph of railway standard rates. The highest class graph *R.1* should probably start very low and should begin concave before it becomes convex. That is to say it should rise only slowly with distance at first, then it should rise rather steeply, and end by tapering off in the traditional manner. From this main trunk should branch off the other rate scales that are deemed necessary, each new branch being itself capable of further subdivision. In this way the one or two scales at 5 miles can become as many scales as are needed at greater distances.

But the rate at which *R.1* has been made to increase once it turned upwards may not suit all kinds of traffics and still less all weight of consignments. The bifurcating scale is not troubled by this as another trunk line *S.1* can be run in, cutting all or some of the "R" classes.

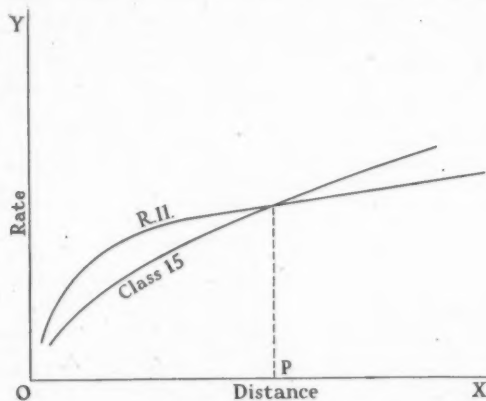


Fig. 1—Example of "R" mileage rate and its relation to standard scale

drastic simplification of the standard class rates would therefore be a pity, but such complications as the standard rates retain should be made to correspond with present-day requirements.

Those who advocate a reduction in the number of railway freight classes are fully justified for all short-haul traffic. At short distances there is not room to crowd in 21 classes between the highest and the lowest class rates, but at greater distances, say over 100 miles, the number of classes suitable for short distances makes the gap between the rates for one class and those on either side of it excessive; the penalty for being in the higher class is too much, and traffics in the higher classes will fight strenuously to be put in the lower classes although at short distances. Those interested in these traffics would accept the different classifications without question.

But how, it may be asked, can you have one number of classes at one distance and another number at another distance? The answer, though no one seems to have realised it, is quite simple: It is the bifurcating scale which I first advocated in my report on the East African railways. So far as I know, no one has actually adopted scales of this kind, so I continue to think of them as

studying French railway rates I found a whole series of "R" mileage scales was being experimented with. These scales rose more steeply than the normal scales at short distances but tapered off more quietly, after say 50 miles, so that at greater distances these scales cut across the normal scales. Thus Fig. 1, Scale *R.11*, might have cut the standard scale for Class 15 at a distance represented by *O.P.* I have completely forgotten for what purpose the "R" scales were designed, but as far as I was able to discover there was not a single commodity given an "R" classification. On the other hand there were quite a number of commodities classified Class 15 (say) up to distance *O.P.* and *R.11* beyond. If you wipe out the unused part of *R.11* above Class 15 and retain the used part only, what remains is my bifurcating scale.

The complete elasticity of the bifurcating scales enables the rate designer to have one class only for short distances if he so wishes, and yet enables him to run in as many classes as he fancies at greater distances.

Now that I have introduced the reader to my bifurcating scales I propose to go a stage further, and show how I think they should be used, but it is greatly to be hoped that those who find themselves

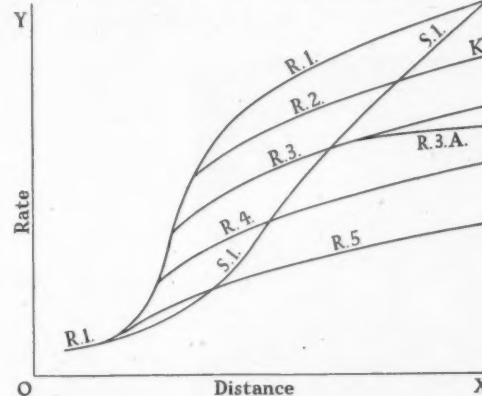


Fig. 2—Example of a bifurcating scale of curves

Any point *K* on any scale *R.2* in Fig. 2 can then be reached either by *R.2* throughout or by a combination of *S.1* and *R.2*. There is no theoretical objection to the multiplication of *S.1* curves, but I think one will prove to be enough. Further cross-over points, however, could be arranged between one class and another, once the rate maker can rid his mind of the false idea that each class must retain its separate existence throughout its length.

To illustrate what is meant, let a commodity, say artificial fertilizers in 2-ton quantities, be classified with the help of the bifurcating scales. At shorter distances let it be thought that high rates are desirable but road costs make the *R.1* scale unsuitable. So the *S.1* scale is used. At the distance represented by the point of intersection of *S.1* and *R.3* the rates have got high enough, so the traffic is classified *R.3*. When *R.3* divides and *R.3.A* is created road competition is no longer effective and class *R.3* is, therefore, preferred to *R.3.A*. At greater distances, however, it may be thought that the rate has reached a height which is tending to discourage the adequate use of fertilizers on remote farms. A maximum rate may then be applied until the flat rate cuts *R.3.A* when the *R.3.A* class

rate could be applied to discourage the wasteful transport sometimes arising from the use of rates that do not increase with distances. The full classification of fertilizers in 2-ton consignments becomes:—

S.1 R.3 up to 150 miles. Thereafter flat rate of *a/bd.* to 204 miles. Thereafter R.3.A (*a/bd.* is the R.3 rate at 150 miles and the R.3.A rate is 204 miles.).

It is very doubtful whether such a

complicated classification would be adopted in the first instance. The traffic would first be classified S.1.R.3. The rest of the classification would be adopted later to satisfy farmers living far from gas works making sulphate of ammonia.

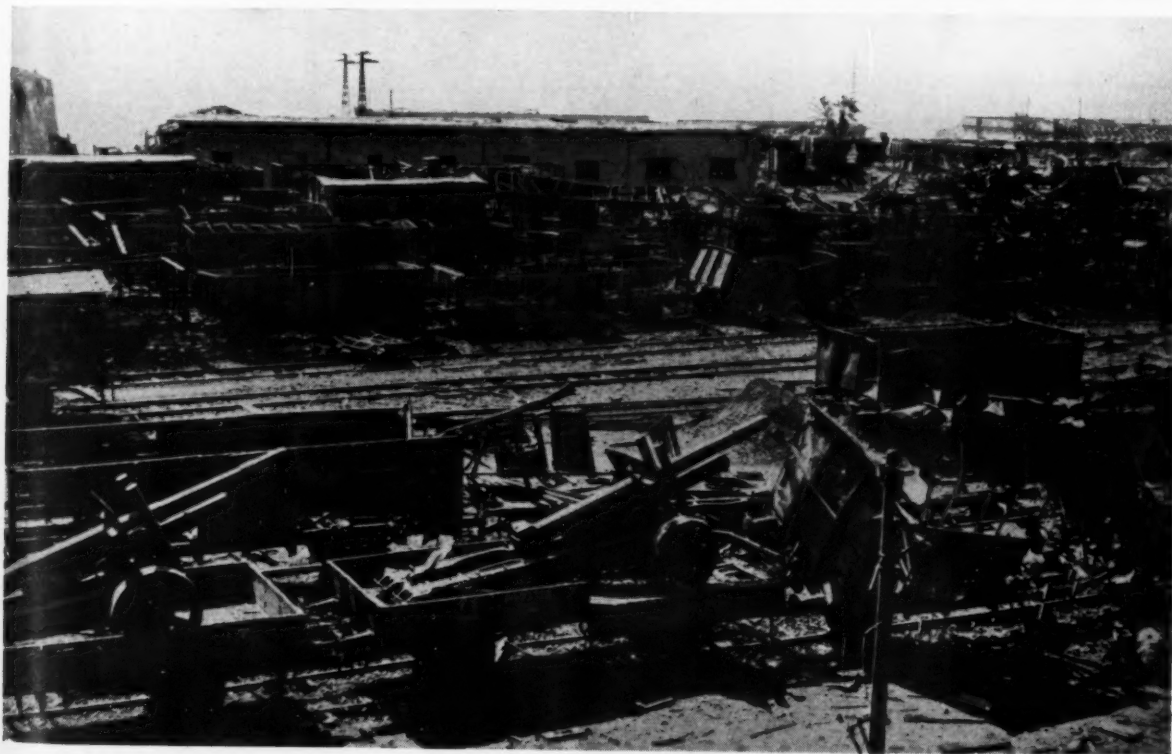
Two points on these scales need emphasising. They are not designed for small consignments which should be cared for by a scale quite differently conceived, and they are intended for station rates

and do not apply to private sidings. Private-siding traffic should always be considered as it is outside England, as station traffic to which an additional charge is added for delivery. Low rates are recommended at short distances because of the cartage costs that have to be incurred. These low rates must not be permitted to undercut private-siding rates which tend to be too low compared with station rates in England.

Railway Development in the Belgian Congo



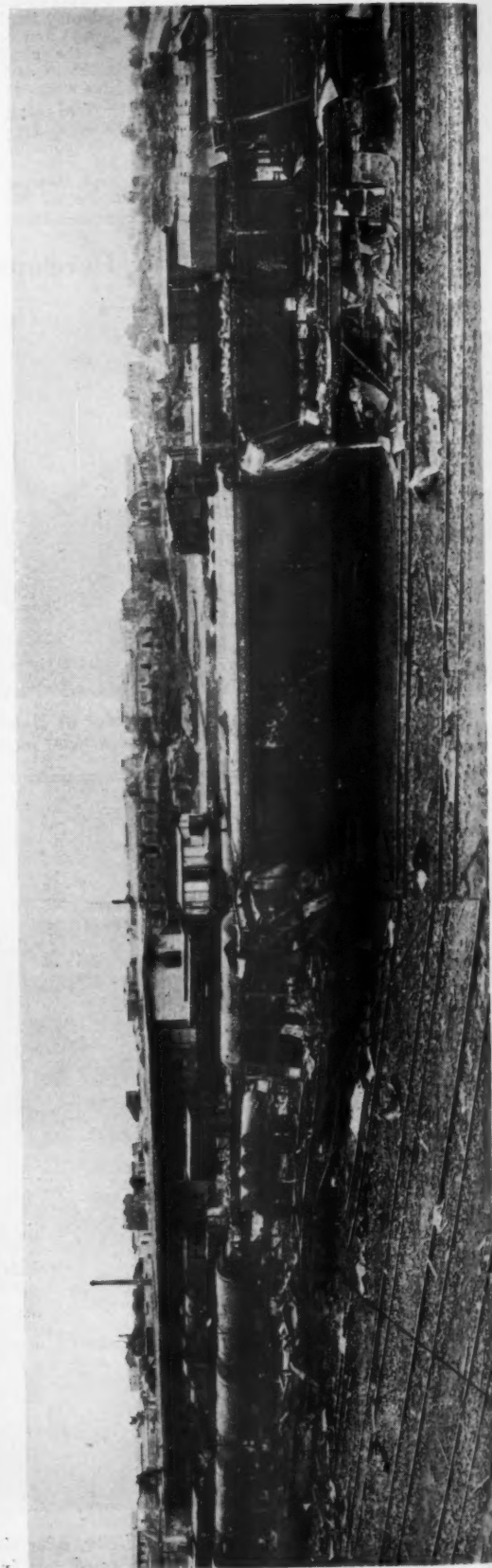
Two views of the four-span railway bridge at Bukama, across the River Lualaba, which carries a single 3 ft. 6 in. gauge line. (See editorial article, page 299, and map in our June 4 issue, page 558)



Marshalling yard at Messina Station, Sicily, after the intensive Allied bombing. The 8th Army entered Messina, the last enemy-occupied port in Sicily, on August 17. (See page 313)

Catania Marshalling Yard

The views reproduced alongside and below form a panorama of the marshalling yard at Catania in Sicily. The wrecked rolling stock exemplifies the accuracy of Allied bombing during the "softening" period which immediately preceded the four-day offensive that placed this key port of Sicily in Allied hands on August 6. The lower view forms a continuation of the right-hand portion of the picture alongside



RAILWAY NEWS SECTION

PERSONAL

It is announced in *The London Gazette* that the Rt. Hon. Lord Burghley, Governor & Commander-in-Chief-designate of Bermuda, who is a Director of the London & North Eastern Railway Company, has been appointed an Additional Member of the Second Class, or Knights Commanders, of the Most Distinguished Order of St. Michael & St. George.

Mr. L. Preston, Assistant Signal & Telegraph Engineer, London, L.N.E.R., who, as recorded in our August 13 issue, has been appointed Acting Assistant to Engineer (Signals), Edinburgh, entered the service

Mr. J. Davidson, Assistant District Locomotive Superintendent, St. Rollox, L.M.S.R., who, as recorded in our August 20 issue, has been appointed District Locomotive Superintendent, Inverness, was educated at Robert Gordons College, Aberdeen, and the Royal Technical College, Glasgow. He served his apprenticeship with the former Caledonian Railway from 1916 to 1921, gaining running-shed, workshop, and drawing-office experience. In 1923 he was appointed Divisional Office Inspector, Motive Power, Glasgow, and in 1934 went to Dundee as Locomotive Foreman; in 1937 he was promoted to a similar position at Greenock, and in the next year

Dolling, First Division Draughtsman, Locomotive Branch of the Gold Coast Railway.

Lt.-Colonel Clive Mansfield Turner, whose death we recorded last week, had held the post of General Traffic Manager of Associated British & Irish Railways Incorporated, representing the four groups and the Great Southern Railways (Er'e) in the U.S.A., with headquarters at New York, since 1937. He began his railway career in 1900 on the former Midland Railway and in 1916 joined the Royal Engineers (Railway Troops). He was in charge of railway working in Salonika and Bulgaria; later, for three months, he was



Mr. L. Preston

Appointed Acting Assistant to Engineer (Signals), Edinburgh, L.N.E.R.



Mr. J. Davidson

Appointed District Locomotive Superintendent, Inverness, L.M.S.R.



The late Lt.-Colonel C. M. Turner

General Traffic Manager, Associated British & Irish Railways, 1937-43

of the former Great Eastern Railway in 1906 and was trained in telegraphy, telephony, and power and signal engineering. He was appointed to the technical staff of the Electrical Engineer's Department in 1912, and afterwards was transferred to the Signal Department as Electrical Assistant; subsequently he was appointed Indoor Assistant to the Telegraph Superintendent. On the amalgamation of the Signal and Telegraph Departments of the Southern Area, L.N.E.R., in 1929, Mr. Preston became Chief Technical Assistant to the Signal & Telegraph Engineer. He was appointed Assistant Signal & Telegraph Engineer, Southern Area, in 1936.

Major S. G. Rowe, the Assistant Secretary of the Great Western Railway Company, who was gazetted to the Cameronians (Scottish Rifles) in 1940, has been appointed a Deputy Assistant Director of Army Welfare (Leg I) at the War Office.

Direction of the movement of military and other special traffic over Canadian Pacific Railway lines has made necessary the creation in Ottawa of the new position of General Agent in Charge of Military & Other Special Traffic. Mr. A. Leo Sauve, Assistant General Agent at Ottawa, has been appointed to this post, which he assumed on August 1. Mr. Forrest D. Appleton, Passenger Agent at Ottawa, is now Assistant General Agent.

to Hurlford. Due to the reorganisation of the motive-power depots of the Northern Division of the L.M.S.R., he was appointed Assistant District Locomotive Superintendent, St. Rollox, in 1940.

SOUTHERN RAILWAY APPOINTMENTS

Mr. J. Bridger, Stationmaster, Victoria, has taken on more important area duties.

Mr. T. A. Chapman, formerly in charge of Clapham Junction, has been appointed Stationmaster, Victoria.

Mr. A. L. Haas, I.S.O., M.I.Mech.E., has retired from the position of Chief Mechanical Engineer, India Store Department, Office of the High Commissioner for India, London, which he has held since 1920. His successor is Mr. H. Bellman, A.M.I.Mech.E., A.M.I.E.E., who has acted as his deputy for 23 years.

The late Mr. W. J. Hosgood, M.Inst.C.E., M.I.Mech.E., who was Locomotive Superintendent, Rhodesia Railways, from 1911 to 1923, left £26,327.

COLONIAL RAILWAY APPOINTMENT

The Crown Agents for the Colonies have made the following first class appointment: Mr. L. Irwin to be Administrative Assistant to General Manager, Nigerian Railway.

The King has awarded the Imperial Service Medal to Mr. Thomas Quarshie

Assistant to the Military General Manager of the Chemin de fer Junction-Salonique-Constantinople; and in 1919 he became a member of the inter-Allied commission controlling the Greek railways. At the latter period he was also in charge of the British railway administration in Salonika. He was mentioned twice in dispatches, and received two foreign decorations. From 1919 to 1920, Colonel Turner was Traffic Superintendent of the Anatolian Railway; he then was appointed General Manager, and, during his three years in that post, as a member of the inter-Allied commission controlling all Turkish railways, he was also Assistant Director of Railways. He returned to England, to the L.M.S.R., in 1925, and two years later went to the Overseas & Continental Traffic Manager's Office, London, where he remained until his appointment to New York. (See editorial note, page 297).

We regret to record the death, on September 12, at the age of 60, of Alderman A. W. Longbottom, a former M.P. for Halifax, who was a prominent member of the Railway Clerks' Association.

Sir Francis Joseph, who is a Director of the London Midland & Scottish Railway Company, and of the Birmingham Railway Carriage & Wagon Co. Ltd., has accepted an invitation to be the first Honorary

President of the National Society of Caterers to Industry.

CANADIAN NATIONAL RAILWAYS

Mr. Frank Williams has been appointed Chief Mechanical Engineer, Canadian National Railways, in succession to Mr. W. F. Connal, who has retired.

Mr. Frank Williams, who, as recorded above, has been appointed Chief Mechanical Engineer, Canadian National Railways, was born in England, and received special apprenticeship-training in shops and drawing offices of the former London & South Western Railway. He also received technical instruction at the Regent Street, Battersea, and Borough Polytechnic Schools in London. He went to Canada in 1911, and was employed at



Mr. Frank Williams

Appointed Chief Mechanical Engineer,
Canadian National Railways

the Montreal Locomotive Works. In 1914 he entered the service of the Canadian Government Railways as a draughtsman in the Mechanical Department; he advanced to the positions of Mechanical Designer and Mechanical Engineer, and in January, 1929, was appointed to Montreal as Mechanical Engineer, Shops Methods. Since 1933 Mr. Williams has had charge of shop methods for the system.

Mr. W. F. Connal, Chief Mechanical Engineer, Canadian National Railways, who, as recorded above, has retired, graduated in 1897 from McGill University with the degree of B.Sc., and joined the British Columbia Electric Railway at Vancouver as a draughtsman. He later occupied various shop and engineering positions in Cleveland, Chicago, Philadelphia, Sharon, Pa., and New York, and in 1910 undertook construction work on the National Transcontinental Railway in the neighbourhood of Cochrane, Ont. In 1919 Mr. Connal was appointed Mechanical Engineer for the Canadian National Railways at Toronto, and in 1923 was transferred to Montreal. He became Chief Mechanical Engineer of the system in 1940.

At an informal luncheon of the Buenos Aires Association of the Institution of Civil Engineers on July 16, Mr. J. R. S. Fox, A.M.Inst.C.E., was the recipient of a pre-

sentation from the members of the Association to mark his completion of his jubilee as an Associate Member, to which grade he was transferred from that of student in 1893. The presentation was made by the Chairman, Mr. D. G. MacCormack, B.Sc., M.Inst.C.E., Chief Engineer, Central Uruguay Railway, and the gathering included Colonel R. E. M. Russell, R.E., Military Attaché, H.M. Embassy; Señor Emilio L. Frugoni, President, National Roads Board; Señor R. E. Ballester, Director, National Irrigation Department; Major Oscar Loewenthal, General Manager, B.A.G.S.R. and B.A.W.R.; Mr. M. F. Ryan, General Manager, B.A.P.R.; most of the chief engineers and principal assistant engineers of the various railways; and representatives of the Institutions of Mechanical and of Electrical Engineers. In proposing the toast of "Absent Friends," the Chairman referred to the 21 members of the 107 belonging to the Association who were serving with the Armed Forces; and coupled with it the name of Sir Follett Holt, who always had taken the keenest interest in the welfare of the Association, and who most generously had endowed it with funds wherewith to encourage the discussion of engineering problems. He requested Major Loewenthal to convey to Sir Follett Holt the good wishes of all present.

BURMA RAILWAYS STAFF CHANGES

Sir John Rowland, until recently Director of Construction, Burma-China Railway, and formerly Chief Railway Commissioner, Burma, has been reappointed Chief Railway Commissioner, Burma. This appointment has been necessitated by the transfer to the Supply Department, Government of India, of Mr. N. Johnson, formerly Chief Mechanical Engineer, Burma Railways, who has been acting as Chief Executive Officer, Burma Railways, for the last year.

INDIAN RAILWAY STAFF CHANGES

Lt.-Colonel D. M. Hambly, whose services were lent to the Defence Department in 1940, has returned to the N.W.R., and has been posted as Executive Engineer, Water Supply.

Mr. H. W. Huggins, Deputy Chief Mechanical Engineer, N.W.R., has been granted leave preparatory to retirement on grounds of ill-health.

Mr. T. M. Robinson, Divisional Mechanical Engineer, Lahore, has been appointed Deputy Mechanical Engineer (Maintenance), N.W.R.

Mr. H. A. Tuck, Deputy Chief Engineer, Signals, N.W.R., has been granted six months' leave preparatory to retirement, as from April 1.

Mr. J. N. Macmillan has been transferred from the E.I.R. to the N.W.R. to relieve Mr. H. A. Tuck as Deputy Chief Engineer in charge of the Signal & Interlocking Branch.

INSTITUTE OF TRANSPORT

Among those elected recently to membership of the Institute of Transport are Messrs. H. Bond, Chief Assistant Traffic Manager, Birmingham & Midland Motor Omnibus Co. Ltd.; R. H. Faro, Chief Engineer, Pickfords Limited; E. H. B. Heysham, Deputy Chief Operating Superintendent (Coaching), East Indian Railway; H. Howells, Labour Superintendent, Birmingham & Midland Motor Omnibus Co. Ltd.; and H. H. Merchant, Traffic Manager, Crosville Motor Services Limited. Those elected to associate membership include Messrs. J. A. Buchanan, District Engineer, Buenos Ayres & Pacific Railway;

J. Crothers, Traffic Superintendent, Northern Ireland Road Transport Board; C. Dickinson, Chief Assistant to Traffic Manager, United Automobile Services Limited; E. M. Pollard, Yorkshire Woollen District Transport Co. Ltd.; C. O. T. Purcell, Area Engineer, United Automobile Services Limited; and E. Roberts, Assistant Road Transport Superintendent, Buenos Ayres & Pacific Railway.

Mr. G. W. V. Shaw, Assistant Secretary, Canadian National Railways, who, as recorded in our September 17 issue, has been appointed Office Assistant to the President, was born in 1895, and entered the service of the former Grand Trunk Railway in 1916, in the General Passenger Department at Montreal. He acted as Secretary to the Passenger Traffic Manager,



Mr. G. W. V. Shaw

Appointed Office Assistant to President,
Canadian National Railways

and in other capacities, until late in 1922, when, on the formation of the Canadian National Railways, he joined the staff of the Chairman & President; after experience as Assistant Chief Clerk in that office he was made Assistant Secretary to the President. In 1934 he was appointed Secretary to the Chairman of Trustees, and later became Chief Clerk to the Chairman & President. Mr. Shaw has been Assistant Secretary of the company since 1938.

Mr. H. A. Tuck, who, as recorded above, is retiring on October 1 from the position of Deputy Chief Engineer, Signals, North Western Railway, India, was born in 1888, and joined the Signal Branch of that railway in 1908. He rose through the various grades until, in 1938, he was appointed Deputy Chief Engineer, Signals.

We regret to record the death in Buenos Aires, after a long illness, of Mr. Donald MacRae, C.B.E., General Manager of the Central Argentine Railway.

Mr. N. H. Thomas is retiring from the post of Research Engineer in the department of the Chief Electrical Engineer, London Passenger Transport Board.

Mr. Reginald Woods, M.I.E.E., has been appointed Managing Director of the General Cable Manufacturing Co. Ltd.

TRANSPORT SERVICES AND THE WAR—203

Coastal Areas Ban Lifted

The restrictions recently imposed under Defence Regulations 13A and 14 on entry into certain coastal areas were removed as from September 19. Similar restrictions may be imposed without notice in these or other coastal areas from time to time.

Better Train Lighting Held Up by Theft

Improved train lighting throughout the British railways, which it was hoped would be completed before the winter, is being handicapped seriously by the theft or damage of electric light bulbs and fittings. In the south of England thefts on the Southern Railway alone during the last six months amount to more than 7,000 special shades and 12,000 electric light bulbs; in addition, 500 blinds a month are being stolen and 2,000 a month damaged. In Scotland, during the first six months of this year, the L.M.S.R. lost 16,300 bulbs, and 2,200 blackout shades were stolen or damaged. The position on the L.N.E.R. is similar, and thefts are particularly heavy on the suburban lines served from Liverpool Street. The G.W.R. also reports large losses of blinds, shades, and bulbs.

Home Guard Transport Insurance

Agreement has now been reached between the Ministry of War Transport and the War Office regarding the insurance of civilian goods and passenger-carrying vehicles used for Home Guard training purposes. The War Department has undertaken to accept liability for all insurance risks during the periodical use of goods and passenger-carrying vehicles for Home Guard training purposes, other than those which fall to be dealt with under the War Damage Acts, in the following circumstances: (a) When the owner's existing insurance policy becomes invalidated by use of a vehicle for training of Home Guard M.T. units; (b) when the owners carry their own insurance or insure their vehicles under block policies; and (c) when the owner's policy is not invalidated, but an excess clause operates or comprehensive insurance has not been effected by the owner. In the last-named case, the War Department will pay the balance of any claim not met in full by the insurers, or accept liability in respect of the risks not covered by the policy. In view of this undertaking, the War Department has decided to reduce the rates payable for the use of vehicles when they accept full or part liability for insurance risks.

Military Rank for Soviet Railwaymen

It may be recalled that considerable interest was taken in the announcement last April that Soviet railwaymen were being brought under military law and discipline (see our April 30 issue, page 443). The militarisation of the Soviet railway system has now been carried a step further by a Decree signed by Mr. Mikhail Ivanovich Kalinin as President of the Supreme Soviet of the U.S.S.R., of which details were broadcast by the Moscow radio on September 5. This Decree introduces quasi-military ranks for railway personnel. High officials will bear such titles as General-Director, Director-Colonel, Director-Lieut.-Colonel, Engineer-Major, Engineer-Captain, and Engineer-Lieutenant. The non-commissioned ranks are to have the titles of Senior Brigadier, and Brigadier, and all others will be called Workers of Railway Transport.

All railway personnel are to wear a light green uniform with shoulder straps of the

same style as that worn in the Soviet Army, and bearing a badge consisting of a crossed spanner and hammer and a small five-pointed star.

A leading article in *Pravda* on September 5, emphasised that the life of the country was dependent upon the efficiency of railway transport, and said that military discipline was therefore necessary in the railway service. The Decree bestowing military rank on railway personnel aimed at strengthening the authority and responsibility of the individual.

Alaskan Communications

To relieve the heavy load on the White Pass & Yukon Railway, a branch of the Alaska Highway is now being built to the port of Haines. This branch will be to the north of the railway.

U.S.A.-Nicaragua Air Line proposed

A Pan American Airways aircraft recently made a trial flight from New Orleans to Managua and was met by Government officials. Regular service will be inaugurated after trials are completed. The new service will relieve to some extent the present routes, which are overtaxed by war needs and priorities. Insufficient service has caused considerable feeling on the part of Nicaraguans who have been unable to secure air transport.

North China Railway

In a recent Japanese broadcast on the operations of the North China Railway Company during the four years of its existence, it was stated that route mileage had increased from 5,000 km. (3,100 miles) to 6,000 km. (3,725 miles). It was also said that passenger traffic had trebled since 1939, and that goods transport had increased by more than 50 per cent. The railway company's bus lines were reported to have increased in route length by more than 400 per cent., namely, from 4,000 km. (2,485 miles) to 17,300 km. (10,750 miles).

New Madagascar Railway

According to the *Journal Officiel de Madagascar et Dépendances*, the construction of a roadbed for a railway, 62 miles in length, between Antsirabe and Ambositra has been authorised. This line will be located on the high plateau in the interior of Madagascar. Reference to the map on page 499 of *The Railway Gazette* for November 20, 1942, indicates that this is a southward extension of the existing railway from Tananarive to Antsirabe. The section from Antsirabe to Ambositra is already covered by a highway. Bridges and other works on the new railway requiring steel are to be left in abeyance for the time being.

A "Ceiling" on American Train Meals

The Office of Price Administration in the United States has taken action to control the price of meals served on trains, whether in dining cars, or those sold in coaches by perambulating attendants, generally known as "butchers." Price "ceilings" have been fixed, with the idea of simplifying the elaborate *à la carte* catering customary in American dining cars, by providing simple standard meals. Breakfast, at 85 cents, is to include fruit or fruit juice, choice of eggs with bacon, ham or sausage, bread or toast, and coffee, tea, cocoa, or milk; *à la carte* items are also to be listed so as to provide breakfast at not more than 60 cents for those so desiring it. The \$1 luncheon includes meat, egg, fish, chicken,

or cheese *entrées*, vegetables or salads, with bread and butter, and a choice of beverage. Dinner, at \$1.10, is on similar lines to the luncheon, save that two vegetables are served with the *entrée*. Passengers may be limited to one cup of coffee and one pat of butter, and sugar may also be rationed. As to the refreshments served at passenger's seats, the maximum price for sandwiches is 15 cents, and for pie, cakes, ice cream, fruit, etc., 10 cents, which is also the maximum price for coffee, milk, and soft drinks. Lists of maximum prices are required to be displayed on every "butcher's" basket. The O.P.A. ruling is incorporated in Restaurant Maximum Price Regulation No. 1, which came into operation on July 1 last.

Taxicab Regulations in the U.S.A.

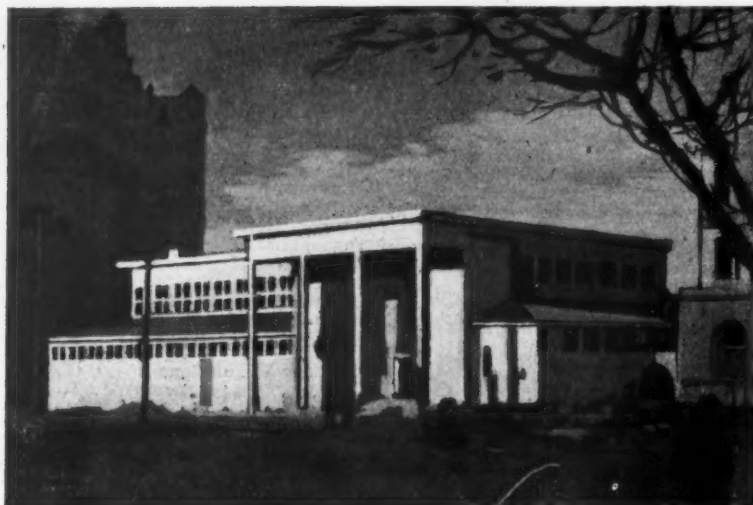
A General Order of the Office of Defense Transportation, dated July 1, is designed to conserve tyres and petrol in taxicab operation. It prescribes many regulations to attain that object. This Order restricts the provision of taxicab service in any municipality to those persons who were engaged in the business on September 1, 1942, and to purchasers of such businesses. It also limits the number of taxicabs which may be operated in any municipality to the number which he, or his predecessor, was operating on September 1, 1942. A taxicab is defined as meaning "any rubber-tyred vehicle (1) propelled or drawn by mechanical power; (2) having a seating capacity of less than ten passengers (including driver); and (3) used in the business of accepting, soliciting, and transporting passengers on call or demand to, from, or between points as may be directed by the passenger or passengers transported or to be transported for compensation." The regulations ban goods transport, cruising, and journeys that exceed 25 miles. Provision is made for exceptional operations in emergencies, but a written report to the nearest O.D.T. office must be made within 48 hours, explaining the emergency conditions.

Railwayman as U.S.A. Mines Director

Mr. Carl Elbridge Newton, President of the Chesapeake & Ohio Railway, has been appointed by the Secretary of the Interior, Mr. Harold L. Ickes, as Director of Mine Operations for the Federal Government. This is the second time that the U.S.A. Government has turned to the railways for an executive officer to handle a particularly tough wartime problem; the previous example was Mr. William M. Jeffers, President of the Union Pacific, who a year ago became rubber administrator for the U.S.A. The C. & O.R. has a particular interest in coal, for it is one of the most important coal carriers in the country. The task before Mr. Newton is that of getting maximum production of coal from the mines, subject to the limits of his authority, which do not extend to wages. Mr. Newton has considerable interests in Great Britain, for he graduated from Dartmouth College in 1920, was awarded a Rhodes Scholarship to Oxford University, graduated from there as a B.A. in jurisprudence in 1922, and in 1923 took the degree of Bachelor of Civil Law; he is also a barrister-at-law of the Inner Temple, London, and has spent much of his life in legal work.

Captured Sicilian Rolling Stock

Further information is now to hand, supplementary to that published at page 289 of last week's issue, concerning the railway equipment which the Allied Forces secured in Sicily. After a tour of the island, Brigadier-General Carl R.



Reproduction from "Novo Vreme" of a view of the temporary station in Belgrade. The well-known Central Station was destroyed by German air attack on April 6, 1941

Gray, Director-General of the Military Railway Service, said that some 300 locomotives, and 3,500 railway carriages and wagons, had been captured during the campaign; more than 55 per cent. of the locomotives were in good running order. Included in this stock were a number of new German carriages which had been ferried from the Italian mainland to Sicily, but could not be returned when the Allies destroyed the Messina Ferry. A sunken ferryboat at the Messina landing stage of the train ferry was shown in the illustration we published in our September 3 issue (page 238).

Italian Railway Fuel

We have already directed attention in these columns to the fact that Germany has been supplying up to 12,000,000 tons of coal per annum to the Italians, and that this source of supply has ceased in respect of such portions of Italy as are in Allied or Badoglio-Italian hands. It is understood that the only immediate commitment of the United Nations is to supply essential fuel for the maintenance

of railway services, and the extent of territory occupied by our Forces will obviously govern the quantitative requirements of the immediate future.

The latest available particulars in respect of electrification on the Italian State Railways gave the electrified track length at 7,308 miles on June 30, 1942. The electrified route length of 3,375 miles on that date compares with 3,017 route miles on June 30, 1939. Electrification in hand on June 30, 1942, was given as covering 168 miles as follows:—

	Route Miles
Milan-Domodossola	78
Firenze/Rifredi-Empoli-Pisa	48
Ciampino-Velletri	17
Ciampino-Albano Laziale	9
Naples (Central)-Cancello	13
Nocera (Inferiore)-Codola	3
	168

Firenze/Rifredi is the junction station with the Florence-Bologna main line, 2 miles out of Florence (Santa Maria Novella), the central station.

Ciampino is on the Rome-Cassino-Naples main line, 9 miles from Rome

Relief for Yugoslavia

By Alexander C. Niven

The unconditional surrender of the Italian Armed Forces, which was announced on September 8, has altered the whole complexion of the war situation for Yugoslavia, where substantial resistance has never ceased, as it makes imminent direct contact between the patriot forces and those of the other United Nations. Plans have already been prepared for immediate action to be taken when the country shall have been liberated, and its inhabitants are enabled to receive material assistance from the outside world. Naturally, these plans envisage the early restoration of essential lines of railway communication, many of which have been attacked repeatedly and severely damaged by patriot forces so long as they were being used for the advancement of German aims.

Naturally, it is neither possible, nor, indeed, necessary, to restore all the railways in Yugoslavia in order to achieve a steady flow of food and material all over the country. What, however, is important is that

some 13 railway lines be reconstructed within the first two months in order to achieve the desired distribution to every part of the country. These lines serve as arteries connecting sea and river ports with the centre of the country. The 13 are as follow:—

	Standard gauge km.	Narrow gauge km.
1. (Salonica) Devdelija-Skopje —Nish-Belgrade	617	
2. Dubrovnik-Sarajevo-Sl. Brod		545
3. (Frontier) Rakek-Zagreb —Sl. Brod-Belgrade	614	
4. Split-Ogulin-Susak	395	
5. Susak-Zagreb	225	
6. Zagreb-Krizeveci-Koprivnica —Gyekenyes	100	
7. Spielfeld (Frontier)-Maribor —Ljubljana	230	
8. Belgrade-Noví Sad-Subotica —Frontier	137	
9. Sarajevo-Uzice-Belgrade		403
10. Bileća-Niksic		71
11. Lapovo-Kraljevo-Skopje	336	
12. Pristina-Pec	38	
13. Prahovo-Nish	182	
Total	2,924	1,019
	3,943 km. (2,450 miles)	

For the reconstruction of these 13 important railways it will be necessary to

(Termini) Station; it serves the important Ciampino aerodrome. Naples (Central) to Cancello is the last section of the Rome-Cassino-Naples main line.

Nocera (Inferiore) is on the electrified Naples (Central) to Battipaglia section, part of the main line to Sicily, 23 miles to the south of Naples. Electric traction was actually in operation on the Nocera (Inferiore)-Codola line on June 1, 1942, but presumably the work was not then complete.

In addition to the electrified system of the State Railways, the electrified lines of privately-owned railways aggregated a route length of 1,142 miles on June 30, 1942. Suburban electric tram lines had a route length of 1,494 miles.

Croatian Railways

It is now learned that passenger traffic has been resumed on the Bosanski Novi to Bihac standard-gauge line, destroyed at various points by Yugoslav patriots and hastily repaired subsequently. There is one mixed passenger and goods train daily in each direction, compared with three daily passenger trains in each direction before the war. The large railway bridge close to Lukac, near Bradina Station on the Sarajevo-Dubrovnik line, 31 miles to the south of Sarajevo, which had been blown up by Yugoslav patriots, is now reported to have been repaired temporarily, and traffic was resumed a few weeks ago. These reports are indicative of the war upon the Croatian railways which is waged by patriots not only in the remoter parts of the country, such as in Bosnia, but also in districts to the north and south of Zagreb, where a good deal of sabotage occurs. There is constant damage and temporary restoration, as the patriots make their frequent and often successful attempts to interrupt German lines of communication and the enemy forces endeavour to restore them.

Although general travelling restrictions have long been in force throughout Croatia, until recently it was comparatively easy to obtain a travel permit on production of a telegram announcing the death of a relative. This facility has been used to such an excessive extent, it is reported, that an official confirmation of the alleged death, by the mayor or by the commander of the police of the place where it is said to have occurred, must also be produced when applying for a travel permit.

supply Yugoslavia during the first two months with the following rails and track materials:—

Standard gauge 350 km. (13 per cent. of the above)
Narrow gauge 200 km. (20 per cent. of the above)
or a total of 5.8 per cent. of the total length of all railway lines in the country.

So far as rolling stock is concerned, no such precise numbers can be estimated, but the need will doubtless be great. Before the invasion, Yugoslavia possessed 54,306 goods wagons. The occupation authorities have taken for themselves a total of 24,700 wagons, which have been removed from the country, and it is estimated that at least another 15,000 have been destroyed in the country.

As in every other occupied country, the Yugoslav railways are primarily in the service of the enemy and not in that of their own country. In Yugoslavia, a mountainous and difficult country so far as communications are concerned, the first thoughts after relief arrives must be railways. If the 13 railways mentioned can be put in order, then Yugoslavia's population will have nothing to fear so far as Allied help in food and material is concerned.



The Railways of Italy, showing the high proportion of electrified mileage. (See paragraph on opposite page)

Great Western of Brazil Railway Co. Ltd.

Annual Meeting

The ordinary general meeting of the Great Western of Brazil Railway Co. Ltd. was held at River Plate House, 7 & 9, Finsbury Circus, E.C.2, on Wednesday, September 22. Mr. W. M. Codrington, M.C., Chairman of the company, presided.

The Chairman, in the course of his statement circulated with the report and accounts, said that the latter reflected the much-improved results achieved during 1942, and the progress which consequently had been made both in clearing the company's indebtedness to its debenture holders and in reducing the debit balance carried forward on profit and loss account. The traffic receipts in currency had reached a higher level than in any year since 1929. But it would be seen that the tonnages of the two main crops on which the permanent fortunes of the company depended—sugar and cotton—had suffered a considerable reduction. That had been more than compensated by the fact that a great deal of the traffic which in normal times would have been carried by road had been forced back on to the railway. The military activities of both the U.S.A. and Brazilian Governments in the areas served by the company had provided additional traffic. Both those factors were directly attributable to the war; but for them, the decline in the company's normal traffic would have made the year's results far less satisfactory.

The additional strain put upon the track and plant by the wartime increase in traffic had been considerable, and could best be illustrated by the fact that, whereas the ton-kilometrage in 1933 had been 95 million, last year it had attained the figure of 172 million ton-kilometres. It seemed hardly necessary to emphasise the burden which the increased movement was placing, not only on the reduced staff, but on the track and equipment. Unfortunately, it came at the end of a period during which the financial results of the company had never been such as to enable adequate provision to be made for renewals. In 1939 the board had been successful in negotiating a loan of £515,000 from the Brazilian Government. That amount would have gone some way towards putting the company's property into a reasonable state of efficiency; but, before the money could be spent, the war had intervened, with the result that many of the necessary imported materials had risen greatly in cost or had become unobtainable. Many betterments had been introduced and much progress, though not as much as had been hoped, had been achieved in overtaking arrears of renewals. Of the unspent portion of the loan, amounting to £160,000, the greater part of necessity would be devoted to work which could be effected by local labour without imported materials.

The ratio of working expenses to gross receipts again showed a slight decrease. With receipts at their present increased level the decline in the percentage naturally would have been far greater but for the tendency for all costs, especially labour costs, to rise. There was every indication that that tendency would continue and, probably, be intensified. Moreover, under the legislation passed since Brazil had entered the war, the company was required to buy war bonds equal in amount to its yearly Brazilian income-tax assessment; and, unless those bonds could

be sold on the market, it would have the effect of restricting the amount of cash which could be remitted to England and devoted to the discharge of indebtedness. The consistently-low exchange rate already had reduced the sterling earnings to a very meagre sum, and the combination of taxation and compulsory saving constituted a heavy additional burden.

Recent reports indicated that the prospects for the next crop season were good.

In the light of all available information, the board had formed the opinion that it would be impossible for the company to discharge its indebtedness to its debenture holders before the expiration, at the end of 1943, of the moratorium authorised under the present scheme of arrangement. It therefore recently had laid the position before the committee appointed under the scheme, and had asked that the moratorium be extended by the

debenture holders. In view of the burden placed on the company's cash resources by British and Brazilian taxation, and the necessity for providing funds for heavy renewals, it also had requested that some alleviation of the position as to indebtedness to the debenture holders should be granted. The committee now had agreed to recommend to the debenture holders that a scheme of arrangement should be made under which the moratorium would be extended for a further twelve months, with power for the committee to extend it for two years further if necessary. In addition, the committee had agreed that powers should be taken under the scheme to enable the company, during the moratorium period, to create a prior lien debenture ranking in front of both the 4 per cent. debentures and the permanent 6 per cent. debenture stock, for a sum not exceeding £250,000. That power would be exercised only with the approval of the committee, as and when it should be found possible to expend money profitably on overtaking arrears of renewals.

The report and accounts were adopted.

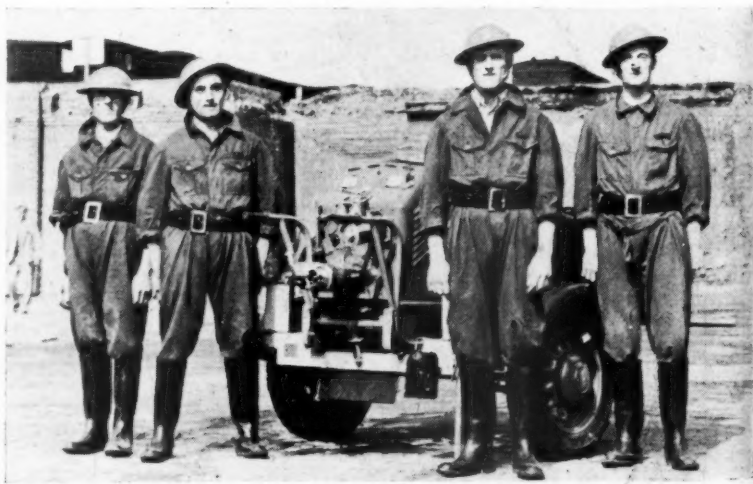
L.N.E.R. Southern Area Trailer Pump Competition

The final of the trailer-pump competition for teams from centres in the Southern Area of the L.N.E.R. was held at Marylebone Goods Station on September 18. The fourteen teams which took part consisted of the winners and runners-up of the eliminating competitions held in the centres concerned. The final was won by the team from Leicester Goods (Braunston Gate) which put up a time of 1 min. 39 sec. for the performance of the specified drill; the runners-up were Copley Hill Locomotive Depot (Leeds) (No. 1 team), with a time of 1 min. 40 sec.; fourteen teams took part, and all recorded better times than those attained in the respective local competitions.

Certificates and prizes were presented to the winners and runners-up by Mr. G. B. Barton, Engineer (London), L.N.E.R., who said that he was deputising for the Divisional General Manager, who regretted that he was unable to be present. He congratulated not only the successful men, but all the teams, which had put up an extremely good show, and he hoped that they would maintain the high standard they had achieved. Assistant Fire Force

Commander C. G. Tobias said that the times of the winning teams compared very favourably with those of the National Fire Service. Mr. J. Benstead, General Secretary, National Union of Railwaymen, said that there could be no better example of the danger from fire than the remains of the warehouse in which the competition had taken place, which had been gutted during the Blitz.

Among officers of the L.N.E.R. who were present, in addition to Mr. Barton, were Messrs. G. H. Skelton, Assistant Accountant; L. H. K. Neil, London City Manager; R. B. Temple, District Goods Manager, Leeds; W. Guy Jones, Road Motor Engineer; A. J. White, Chief of Police; G. A. Musgrave, Locomotive Running Superintendent (Western Section), and L. P. Parker, Locomotive Running Superintendent (Eastern Section), Southern Area; and J. A. Frampton, District Locomotive Superintendent, Kings Cross. Others present included Colonel A. H. C. Trench, Inspecting Officer of Railways, Ministry of War Transport, and Company Officers Trew and Wall, London Fire Force, who acted as judges.



Members of Leicester Goods (Braunston Gate) trailer-pump team, winners of the final, held on September 18, of the competition for teams from centres in the Southern Area of the L.N.E.R.

G.W.R. All-Line Trailer Pump Competition



Mr. K. W. C. Grand, Assistant General Manager, G.W.R. presenting the Milne Trophy to the winning women's team

The success of the first Great Western Railway All-Line Trailer-Pump Competition, details of which were given in our January 8 issue, prompted an even greater response for the second annual competition which took place in Winsland Street, which adjoins Paddington Station, on Sunday, September 19. Since the first competition, many additional teams have been formed and not the least important has been the somewhat exceptional increase in trailer pump teams composed entirely of women, and it was decided to stage a separate competition for women members to take place concurrently with the men's competition. The second all-line competition was marked by the presence of 12 women's teams. The General Manager, Sir James Milne, has awarded a handsome Challenge Shield for the winning women's trailer pump team; this shield comprises the company's Coat of Arms in colour embossed on an ebony-finished shield. Final results were:—

Team	Time	Penalty	Total
Men	m. s.	secs.	m. s.
South Lambeth Goods	26	—	26
Stafford Road C.M.E.	25	7	32
Exeter C.M.E.	27	6	33
Pontypool (Crane St.) Traffic	36	2	38
Bristol Goods	36	5	41
Barry Docks	35	5	40
Kidderminster Goods	39	10	49
Radyr Loco.	39	10	49
Swindon Works Carriage Dept.	49	4	53
Reading Signal Department	2	—	2
Swansea High St. Traffic	2	—	2
Gloucester C.M.E.	14	5	19
Wellington Joint	21	—	21
Oswestry Carriage & Wagon	30	2	32
Bristol Loco. Supt.	34	—	34
Truro C.M.E.	34	—	34
Women	m. s.	secs.	m. s.
Swindon Works Fire Station	20	—	20
Exeter Traffic	22	—	22
Cardiff General	21	2	23
Smithfield Goods	28	—	28
Birmingham Snow Hill	30	—	30
Merthyr Traffic	38	—	38
Worcester Shrub Hill	38	5	43
Plymouth Millbay Goods	38	6	44
Bristol Divl. Loco. Supt. Office	44	4	48
Swansea High St. Traffic	2	—	2
Oxford Goods	2	—	2
St. Mellons Depot	44	12	56
St. Mellons Depot	—	—	Disqualified

The number of trailer pumps on the company's system has increased to approximately 250 and nearly 500 teams have undergone intensive training. The winning teams were:—

Men—South Lambeth (Goods).
Women—Swindon Works Fire Station.

From an examination of the final results, it will be seen that the timing put up by each of the competing teams was so close that each merits high praise.

In the unavoidable absence of the General Manager, Sir James Milne, the Milne Cup was presented to the South Lambeth Goods Men's team, and the Milne Challenge Shield to the Swindon Works Fire Station Women's team by Mr. K. W. C. Grand, Assistant General Manager, who expressed on behalf of the company pleasure at the splendid team-work and *esprit-de-corps* which was displayed. Colonel Officer French, one of the N.F.S. Adjudicators, responded.

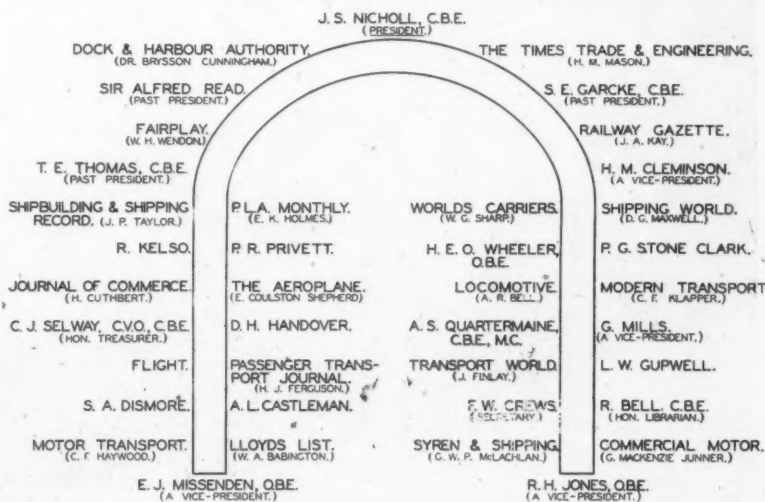
The N.F.S. adjudicators for the competition were:—Company Officer French, Company Officer Robilliard, and Company Officer Scarrott.

Among the company's officials and visitors present were:—Messrs. K. W. C. Grand, Assistant General Manager, R. J. Armstrong, Divisional Locomotive Superintendent, Worcester, Dr. H. Cavendish Fuller, Chief Medical Officer, Messrs. E. C. Cookson, Assistant to Chief Engineer (also representing Mr. Quartermaine, C.B.E.), C. T. Cox, M.B.E., Divisional Superintendent, Paddington, A. E. C. Dent, Road Motor Engineer, E. N. Godfrey, Superintendent of the Line's Office, S. G. Hearn, Operating Assistant to Superintendent of the Line, G. S. Hussey, M.B.E., L.M.S.R., J. A. Kay, Editor, *The Railway Gazette*, H. G. Kerry, Divisional Locomotive Superintendent, Paddington (also representing Mr. F. W. Hawksworth), R. C. Kirkpatrick, Divisional Engineer, Paddington, Gilbert Matthews, Superintendent of the Line, A. S. Mills, Regional Fire Prevention Officer, Ministry of War Transport, G. E. Orton, Public Relations Officer, G. Stephens, Chief of Police, Colonel A. H. C. Trench, C.I.E., Ministry of War Transport.

Luncheon to the Transport Press

Mr. J. S. Nicholl, President of the Institute of Transport, presided at an informal luncheon, at the Connaught Rooms, London, last week, to Editors of

the chair, explained that the gathering enabled him to review certain of the Institute's activities in a way which had not been possible more publicly in these



papers dealing specifically with transport problems. He was supported by officers of the Institute and members of the Executive Committee of the Council.

Mr. J. S. Nicholl, whose term as President is nearing its close after two years in

days of less frequent gatherings. He discussed the transport problems of the war and afterwards. He observed, in the course of his remarks, that although, through various circumstances in the earlier days, there was a larger propor-

tion of one particular section and it was formerly considered as an Institute with preponderantly railway support, now the balance of transport representation was being more evenly maintained. The Institute was receiving increasing support from shipowners and it could truthfully be said that today they touched every branch of transport. The work of the Institute, he added, was making it something akin to a public relations officer of transport.

Sir Alfred Read, a past president, was among those who took part in an informal discussion.

Notes and News

"Facts About British Railways in Wartime."—We understand that more than 60,000 copies were sold within a few days of publication of the 1943 enlarged and illustrated edition of "Facts About British Railways," which was placed on sale to the public at 1s. a copy. This 64-page book is now practically unobtainable.

C.P.R. Dining-Car Employees.—On August 13, the Canadian Minister of Labour announced that, in connection with a dispute between the Canadian Pacific Railway Company and its dining-car employees, who are members of the Brotherhood of Railway Trainmen, a conciliation board had recommended that the brotherhood be recognised as the sole negotiating agency for dining-car workers.

Guatemalan Railway Reopened.—A report from Guatemala dated last July says that service has been resumed on the Verapaz Coffee Railway, which links Panacajche with Panzos. This railway connects at Panzos with a river launch service to the port of Livingston. It was formerly a German-owned railway, and was taken over by the Guatemalan Government late in 1941, when operations were suspended. The line, which is of 3-ft. gauge, and is 28 miles in length, was completed in

1897, to serve the coffee plantations of the Verapaz district. Its location was indicated on the map published at page 333 of our issue of March 26 last, when we described the railways of Guatemala and Salvador.

"Bus Meets Train" Indicators.—At four London Transport stations, namely, Cockfosters, Osterley, Enfield West, and Southgate, small illuminated signs have been installed in the forecourts from which buses run. Trains approaching the stations operate electric contacts on the track and light up the signs. The bus regulating official, who may be on the point of dispatching a bus, is thereby warned and holds it back sufficiently long to enable train passengers to catch it. These signs will be installed only at stations where bus services operate at wide intervals and where approaching trains cannot be seen from the station front.

Head Wrightson & Co. Ltd.—Report for the year ended April 30, 1943, shows that the profit, including £1,326 sundry income, was £198,843. Deducting debenture interest and directors' fees, depreciation £30,000, and £140,000 for income and E.P.T. tax leaves £21,093. Adding £27,648 brought forward makes £48,741. After transferring £4,970 to reserve for general purposes, and providing for preference dividend and interim ordinary dividend, there is a balance of £34,760. The final dividend on the ordinary shares is 3½ per cent., making 6 per cent., less tax, for the year, and leaving £29,247 to be carried forward.

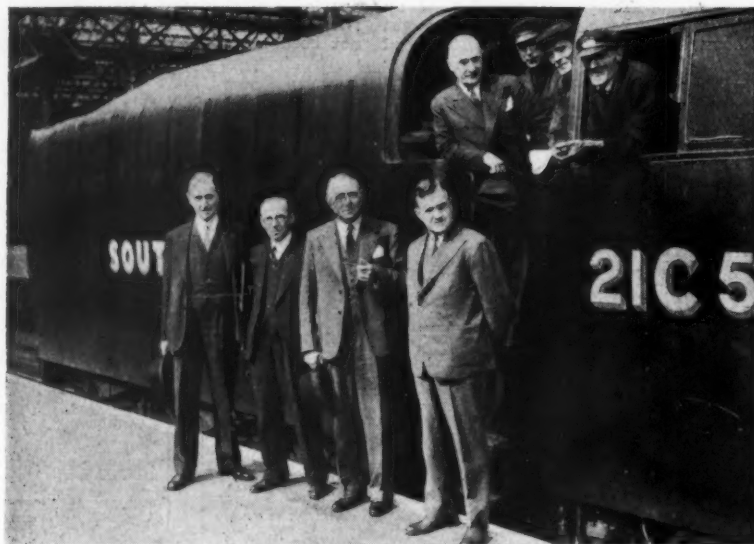
Presentation to Mr. G. S. Begg.—At a meeting of railway superintendents on September 15, a presentation was made to Mr. G. S. Begg, who recently retired from the position of Passenger Manager, Scottish Area, L.N.E.R. Mr. W. M. Perts (Commercial Superintendent, Southern Railway), Chairman of the Railway Clearing House Superintendents' Conference, who presided, said that many members who were unable to be present desired to convey their good wishes to Mr. Begg. He referred to the latter's association with the railway service

of nearly 50 years; Mr. Begg had been a member of the Superintendents Conference since 1930, and had occupied the chair in 1933. Messrs. R. Gardiner, Superintendent, Scottish Area, L.N.E.R., C. G. G. Dandridge, Advertising Manager & Assistant Passenger Manager, Southern Area, L.N.E.R., G. E. Orton, Commercial Assistant to the Superintendent of the Line & Public Relations Officer, G.W.R., and C. Johnstone, Assistant Chief Commercial Manager (Passenger), L.M.S.R., also spoke. Mr. Begg expressed his appreciation of the gift and regret at leaving a business career of which he had many happy recollections, and par-

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices	
			Sep. 17, 1943	Rise/ Fall
G.W.R.				
Cons. Ord.	58	39	60	+ 1
5% Con. Pref.	115½	105½	109	- 1½
5% Red. Pref. (1950) ..	109½	103½	107	- 1
5% Rt. Charge	133½	123½	125½	- 1
5% Cons. Guar.	130½	121½	122½	- 1
4% Deb.	117	105	108½	- 1
4½% Deb.	118	108	110½	- 1
4½% Deb.	125	113	118½	- 1
5% Deb.	137	127	129	- 1
2½% Deb.	77	70	75	- 1
L.M.S.R.				
Ord.	28½	16½	31½	+ 1½
4% Pref. (1923)	63½	50½	59½	- 1½
4% Pref.	76½	67½	71	- 1
5% Red. Pref. (1955) ..	103½	94½	103½	- 1
4% Guar.	104½	97½	97½	- 1
4% Deb.	108½	101½	104	- 1½
5% Red. Deb. (1952) ..	111	107½	109½	- 1
L.N.E.R.				
5% Pref. Ord.	9½	2½	9½	- 1
Def. Ord.	5	1½	4½	+ 1
4% First Pref.	62	49½	59½	- 1½
4% Second Pref.	32½	18½	31½	- 1
5% Red. Pref. (1955) ..	95½	79	93½	- 1
4% First Guar.	98	88	95	- 1
4% Second Guar.	90	78	87	- 1½
3% Deb.	85	76	80	- 1
4% Deb.	106½	100½	102½	- 1
5% Red. Deb. (1947) ..	106	103	104	- 1
4½% Sinking Fund Red. Deb.	106	102½	105½	- 1
SOUTHERN				
Pref. Ord.	77	61½	75½	+ 1
Def. Ord.	23½	14½	24½	+ 1½
5% Pref.	112½	104	104½	- 1
5% Red. Pref. (1964) ..	110½	105½	111½	- 1
5% Guar. Pref.	131	121½	123½	- 1
5% Red. Guar. Pref.	115½	109½	111½	- 1
4% Deb.	116	104½	107	- 1
5% Deb.	134	125½	129½	- 1
4% Red. Deb. (1962- 67)	110½	106	107½	+ 1
4% Red. Deb. (1970- 80)	111	106½	107½	+ 1
FORTH BRIDGE				
4% Deb.	109½	108	106	- 1
4% Guar.	105½	100	104½	- 1
L.P.T.B.				
4½% "A"	122½	111	116½	- 1
5% "A"	131½	122	123½	- 1
3% Guar. (1967-72) ..	95½	97½	98	- 1
5% "B"	121	111½	115½	+ 2
5% "C"	56½	38	47	- 1
MERSEY				
Ord.	27½	20½	31	- 1
3% Perp. Pref.	61½	56½	64	+ 3
4% Perp. Deb.	102½	99½	103	- 1
3% Perp. Deb.	80½	76	78	- 1
IRELAND BELFAST & C.D.				
Ord.	9	4	6	- 1
G. NORTHERN				
Ord.	29½	12½	17½	- 1½
G. SOUTHERN				
Ord.	25	10	16½	- 1
Pref.	29	12½	21	- 1½
Guar.	53	35½	39½	- 1
Deb.	71½	55½	6½	- 1

\$ ex-dividend



Mr. W. M. Neal, Vice-President, and Mr. B. W. Roberts, General Purchasing Agent, Canadian Pacific Railway, who are visiting this country, recently inspected the Southern Railway "Merchant Navy" class locomotive "Canadian Pacific."

Left to right: Mr. O. V. Bulleid, Chief Mechanical Engineer, S.R.; Mr. F. W. Motley, Acting European Manager, C.P.R. (who performed the ceremony of naming the locomotive on March 27, 1942); Mr. E. J. Missenden, General Manager, S.R.; Mr. Roberts; and (on footplate) Mr. Neal

ticularly his severance from the many friends he had made during his long railway career.

Scarborough Accident Inquest.—At the inquest held on September 15 into the deaths of four soldiers, which resulted from the accident in Scarborough Station on August 10 last, verdicts of accidental death were returned in each case. The jury was of opinion that the signalman's error of judgment which had occasioned the accident did not amount to criminal negligence.

Butterley Co. Ltd.—Net profit for the year to March 31, 1943, was £144,783, and adding £63,259 brought forward, makes £208,042. An interim dividend of 3½ per cent., less tax, was paid on December 31, on the ordinary stock, and a second interim ordinary dividend, of 8½ per cent., less tax, has been paid in respect of the year ended March 31, 1943. No further distribution is being made for this period. A sum of £35,000 has been transferred to reserve, and the amount carried forward is £65,042.

Passenger Transport in Toronto.—The Toronto Transportation Commission in 1942 broke all records for passengers carried and revenue collected. Passengers carried by the city's system of trams and buses totalled 238,991,803, and transfer passengers numbered 124,592,251. A subsidiary company carried 8,708,989 revenue passengers. To obtain these results, 946 trams and 364 buses operated over 267 route miles of tram line and 872 miles of bus and coach routes. During the year, 60 new trams, 25 buses, and 32 coaches were placed in operation.

L.M.S.R. Waste-Steam Meter.—In connection with the saving of fuel, a "waste-steam meter," to enable waste-steam leakage from pistons and valves in steam hammers to be detected and measured, has been designed in a L.M.S.R. workshop. The meter already has proved its usefulness. Leakages of 10,000 lb. and 2,000 lb. an hour have been detected and resulting repairs have reduced wastage by 80 per cent. In one case the meter showed that three steam hammers were wasting 116 tons of coal a year. It is hoped to publish a description of the apparatus in a later issue.

New South Wales Railways.—For the quarter ended March 31, 1943, the earnings of the New South Wales Railways amounted to £8,281,468, an increase of £1,489,747 in comparison with the corresponding quarter of 1942. Expenditure advanced from £5,084,164 to £6,410,233, and the operating ratio was 77·40 per cent., against 74·86 per cent. The number of passengers was 59,747,676, an increase of 5,663,831, and coaching earnings improved from £3,017,207 to £3,698,351. Tonnage of goods traffic was 4,563,450, against 4,399,816, and merchandise earnings advanced from £3,456,285 to £4,216,843. Miles open were 6,126½, compared with 6,127.

Valencia Tramway & Railway Company.—At the recent general meeting of Tranvías y Ferrocarriles de Valencia the Chairman declared that the company, after prolonged negotiations, had secured certain German railway material originally intended for Portugal. The first consignments had arrived already. This material and the repair work carried out on the company's system during 1942 had enabled the services to cope with greatly augmented traffic. The railway connecting Valencia with Villanueva de Castellón was being converted to electric traction. No progress beyond the preparation of surveys, had been made with the scheme for the construction of an underground system in Valencia, reference to which was made in

our October 2 issue, page 319, but it was expected that the concession would be granted this year. Reference to the company's report for 1942 was made in our August 20 issue.

New C.N.R. Locomotives.—Satisfactory service experience has been obtained with the 35 Canadian National Railways 4-8-4 tender locomotives of the "6200" class, which were described in *The Railway Gazette* of August 13 last, and the Montreal Locomotive Works recently commenced work on an order for 30 engines of a generally similar type. The first of these, bearing the service number 6235, has been completed and officially taken over by Mr. R. C. Vaughan, Chairman & President, C.N.R.

Mail Train Robbery.—A daring mail bag robbery involving the theft of £6,000 worth of bank notes and jewellery from the mail van of the 7.20 p.m. train from Euston to Inverness on August 31 is being investigated by the police over a wide area. According to *The Glasgow Herald*, most of the stolen packages were destined for delivery in the Glasgow district. The theft was discovered when the mail van, after having been uncoupled and attached to another train *en route*, arrived in Glasgow. It has been suggested that a stoppage a few miles north of Crewe may have some bearing on the matter. The numbers of the 5,170 £1 notes stolen are known.

Road Traffic Signs.—The Public Transport Association has submitted a memorandum to the Ministry of War Transport's Committee on Traffic Signs recommending that signs for the control of all forms of traffic should be standardised, according to the form of indication given. This should also apply to height and location. An example would be the need for placing an indication of a road junction always at the same distance from the junction. It is suggested that place names should be used instead of road numbers, and that the responsibility for the erection and maintenance of all signs should be that of one authority. The memorandum advocates

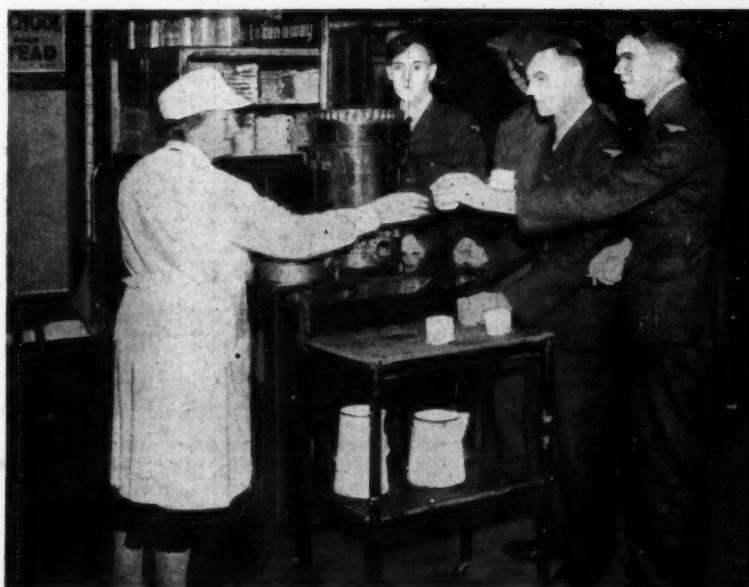
that all signs should be capable of being read easily from a moving vehicle, both by day and night; that signs should clearly indicate their purpose, *e.g.*, the difference between approaching a Y and a cross junction; and that, where there is a bye-pass road there should be every possible invitation for through traffic to use it. It will be obvious that improvements at road junctions will reduce the number of signs necessary.

Southern Railway Dining Cars Converted to Hospital Coaches.—The first of six hospital evacuation coaches to be converted from Southern Railway dining cars was taken over for the U.S.A. Army at Waterloo on September 17 by Brigadier-General P. R. Hawley, Chief Surgeon, Brigadier-General F. S. Ross, Chief of Transportation, and Major-General J. C. H. Lee, Commanding General of Services of Supply, European Theatre of Operations. The coach, which is intended to provide medical service when a hospital train is unnecessary, or not available, has accommodation for twelve stretcher, and eleven sitting, patients, and is equipped with a kitchen capable of serving extra coaches, and vacuum and compressed-air brakes.

Contracts and Tenders

Below is given a list of orders placed recently by the Egyptian State Railways:—

British Insulated Cables Limited: Wire.
General Electric Co. Ltd.: Copper wire.
Tubes Limited: Steel pipes.
I.C.I. Metals Limited: Copper plates.
Ericsson Telephones Limited: Fuses.
G. A. Harvey & Co. (London) Ltd.: Steel wire and wire ropes.
John George & Sons Ltd.: Nails.
Silvertown Lubricants Limited: Transformer oil, wagon-axle grease.
Joseph Steel & Sons Ltd.: Springs.
Sterns Limited: Oil.
James Arnott & Sons Ltd.: Oil.
E. Baylie & Co. Ltd.: Iron chains.
Ferodo Limited: Discs.
London Zinc Mills Limited: Zinc sheets.
C. C. Wakefield & Co. Ltd.: Engine oil.



One of the refreshment-trolleys which the London Passenger Transport Board has installed recently at several of its stations, and of which details were given in our last week's issue, page 295. The picture shows that at Baker Street Station.

Railway Stock Market

The general undertone of Stock Exchange markets has been firmer, although in most sections the volume of business was moderate. Confidence was indicated by the small amount of selling in evidence; the war news was the dominating influence on sentiment. There appears to have been little modification of the optimistic views which have developed as to the post-war dividend outlook of various groups of industrial shares. There has been a fairly general, but moderate, rally in junior home railway stocks, attributed mainly to some improvement in demand attracted by the large yields. Great Western ordinary still yields over 7½ per cent., L.M.S.R. ordinary fully 8 per cent., and L.N.E.R. second preference over 8½ per cent. Moreover, L.M.S.R. senior preference returns 5½ per cent. and the 1923 preference nearly 6½ per cent. The yield on L.N.E.R. first preference is also around the latter rate; a slightly smaller yield is shown on Southern preferred. Southern deferred yields 7½ per cent. There is, of course, general confidence that dividends at around last year's rates will be forthcoming for the current year. In the case of L.M.S.R. ordinary, and L.N.E.R. second preference, fractionally better dividends may be possible according to some views; but sentiment as to home railway stocks generally has continued to be influenced by uncertainties as to the post-war outlook, although views cur-

rent in some quarters are unduly pessimistic. Indeed, they would seem to be based mainly on the fact that on so many occasions in the past the reasonable hopes of railway stockholders have been disappointed. The fact that under the terms of the financial agreement, stockholders have not been permitted to receive more than a very small return, may in the long run prove an important factor in emphasising their claim to just treatment in the settlement of post-war transport problems. The reason that the dividend outlook of home railway junior stocks is clearly defined so long as the financial agreement is in force has been a factor preventing the development of speculative activity in the stocks. This is in sharp contrast to the position as to numerous industrial shares, sentiment in regard to which has been governed by the assumption of a return to pre-1939 dividend rates after the war, although their dividend outlook will depend on many factors, including whether there is an early withdrawal of E.P.T. Home railway prior charges subsequently became firmer in sympathy with the better trend in gilt-edged securities; but where changed, movements on balance have shown fractional declines.

Compared with a week ago, Great Western ordinary has improved from 58½ to 59½ at the time of writing; the 5 per cent. preference stock was a point down at 109, but the 4 per cent. debentures

remained at 108. L.M.S.R. ordinary rallied from 31½ to 31½; the 1923 preference was 60, compared with 59, the senior preference was 74, and the guaranteed stock declined fractionally to 99. L.N.E.R. second preference rallied from 30½ to 31½ and the first preference from 58½ to 59½. On the other hand, L.N.E.R. first guaranteed declined on balance from 95½ to 95, and the second guaranteed from 87½ to 87. Southern deferred was 24½, compared with 23½, and the preferred 75½, compared with 74. Southern 5 per cent. preference was, however, lowered from 109 to 108. Elsewhere, London Transport "C" rallied sharply (demand found the stock only in moderate supply in the market) and has risen on balance from 64½ to 69; further moderate declines were, however, shown in the "A" and "B" stocks.

Argentine railway securities were better in sympathy with the rise in Argentine Government bonds which followed news of the impending repatriation of Argentine sterling loans. Doubtless a proportion of the funds arising from this repatriation will be reinvested in Argentine railway stocks. Sentiment as to the latter has also been assisted by the debenture interest payments announced by the Argentine Great Western and B.A. and Pacific companies. Elsewhere, San Paulo ordinary eased. French railway sterling bonds were reactionary, but Canadian Pacifics were better.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ending	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or stock	Prices						
			Total this year	Inc. or dec. compared with 1941/2		Totals		Increase or decrease		Highest 1942	Lowest 1942	Sept. 17 1943	Yield % (Note)			
						1942/3	1941/2									
South & Central America	Antofagasta (Chili) & Bolivia	834	12.9.43	26,770	+	6,660	36	1,027,670	771,130	+	256,540	Ord. Stk.	14	71	142	Nil
	Argentine North Eastern	753	11.9.43	13,740	—	1,998	11	145,326	145,050	—	276	6 p.c. Deb.	194	10	204	Nil
	Bolivar	174	Aug., 1943	4,508	+	718	35	41,913	35,191	+	6,722	Bonds	204	9	204	Nil
	Brazil	—	—	—	—	—	—	—	—	—	—	Ord. Stk.	71	4	64	Nil
	Buenos Ayres & Pacific	2,807	11.9.43	95,100	+	5,700	11	854,220	898,680	—	44,460	Ord. Stk.	123	74	152	Nil
	Buenos Ayres Great Southern	5,080	11.9.43	156,300	+	20,103	11	1,467,240	1,337,400	+	129,840	Ord. Stk.	124	6	14	Nil
	Buenos Ayres Western	1,930	11.9.43	52,620	+	1,980	11	496,681	520,440	—	23,760	"	91	44	94	Nil
	Central Argentine	3,700	11.9.43	140,835	+	8,931	11	1,332,093	1,310,796	+	21,297	"	33	21	4	Nil
	Do.	—	—	—	—	—	—	—	—	—	—	Ord. Stk.	8	21	4	Nil
	Cent. Uruguay of M. Video	972	11.9.43	29,479	+	11,287	11	309,194	213,631	+	95,563	Ord. Stk.	164	11	144	Nil
	Costa Rica	262	July, 1943	23,251	+	10,490	4	23,251	12,761	+	10,490	Stk.	904	89	944	6½
	Dorada	70	July, 1943	26,425	+	9,165	28	146,917	98,475	+	48,442	1 Mt. Db.	33	41	7	Nil
	Entre Rios	806	11.9.43	20,754	—	483	11	204,636	186,624	+	18,012	Ord. Stk.	9/-	9/-	32/6	Nil
	Great Western of Brazil	1,030	11.9.43	14,200	+	3,900	36	561,000	364,700	+	196,300	Ord. Sh.	—	—	—	Nil
	International of Cl. Amer.	794	June, 1943	\$591,995	+	\$62,010	24	\$3,904,639	\$3,689,137	+	\$215,502	"	—	—	—	Nil
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	—	—	1st Pref.	11	5/3	14	Nil
	La Guaira & Caracas	221	Aug., 1943	7,285	—	2,540	34	68,425	54,765	+	13,660	5 p.c. Deb.	111	5	864	Nil
	Leopoldina	1,918	11.9.43	35,951	+	4,216	36	1,236,341	1,098,104	+	138,237	Ord. Stk.	64	14	14	Nil
	Mexican	483	7.9.43	ps. 350,300	+	ps. 122,600	9	ps. 3,991,100	ps. 2,947,400	+	ps. 1,043,700	Ord. Stk.	1	—	—	Nil
	Midland Uruguay	319	July, 1943	15,291	+	2,683	36	15,294	12,614	+	2,680	"	—	—	—	Nil
	Nitrate	382	15.9.43	6,677	—	491	36	108,825	132,196	—	23,371	Ord. Sh.	77/6	34	77/6	Nil
Paraguay Central	274	10.9.43	\$5,743,000	+	\$2,077,000	11	\$55,666,000	\$40,124,000	+	\$15,542,000	Pr. Li. Stk.	53	40	75	8	
Peruvian Corporation	1,059	Aug., 1943	106,923	+	21,118	9	206,941	165,606	+	41,335	Pref.	194	54	154	Nil	
Salvador	100	July, 1943	c 108,000	+	c 29,000	1	c 108,000	c 79,000	+	c 29,000	"	59	41	59	3½	
San Paulo	153	5.9.43	50,794	+	8,679	35	1,509,700	1,312,258	+	197,442	Ord. Stk.	41/-	23/-	28/9	Nil	
Taitai	160	Aug., 1943	6,215	+	980	37	9,730	11,725	—	1,995	Ord. Sh.	—	—	—	Nil	
United of Havana	1,301	11.9.43	45,836	+	10,467	11	517,947	416,551	+	101,396	Ord. Stk.	84	24	54	Nil	
Uruguay Northern	73	July, 1943	1,372	+	237	4	1,372	1,142	+	230	—	—	—	—	Nil	
Canada	Canadian Pacific	17,034	14.9.43	1,198,400	+	128,400	37	40,301,800	34,963,600	+	5,338,200	Ord. Stk.	164	94	16	Nil
India	Barst Light	202	Aug., 1943	15,285	+	2,003	22	107,055	76,587	+	30,468	—	—	—	—	Nil
	Bengal-Nagpur	3,267	Feb., 1943	932,775	+	84,975	46	10,031,400	9,111,000	+	920,400	Ord. Stk.	1024	88	1024	3½
	Madras & Southern Mahratta	2,939	20.6.43	277,275	+	48,250	12	2,247,340	1,768,616	+	478,724	"	1054	87	1074	6½
	South Indian	2,349	20.5.43	189,379	+	5,937	6	975,109	890,602	+	84,507	"	1034	88	1034	4½
Various	Egyptian Delta	—	10.6.43	13,955	+	52,968	10	98,431	75,685	+	19,746	Pr. Sh.	54	14	24	Nil
	Manila	—	—	—	—	—	—	—	—	—	—	B. Deb.	44	35	40	81
	Midland of W. Australia	277	31.7.1943	34,225	+	6,356	4	34,225	27,869	+	6,356	Inc. Deb.	95	90	100	6
	Nigerian	1,900	26.6.43	60,473	—	1,150	11	831,293	693,193	+	138,100	"	—	—	—	Nil
	South Africa	13,291	17.7.43	913,075	+	66,738	15	13,113,446	11,863,678	+	1,249,768	"	—	—	—	Nil
	Victoria	4,774	Mar. 1943	1,595,068	+	255,764	—	—	—	—	—	"	—	—	—	Nil

Note. Yields are based on the approximate current prices and are within a fraction of ½
† Receipts are calculated @ 1s 6d. to the rupee

Argentine traffic is given in sterling calculated @ 16½ pesos to the £
\$ ex dividend